# GROUP 55A

# HEATER, AIR CONDITIONING AND VENTILATION

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***⚠ WARNING***

- ***Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and passenger (from rendering the SRS inoperative).***
- ***Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.***
- ***MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B - Supplemental Restraint System (SRS) before beginning any service or maintenance of any component of the SRS or any SRS-related component.***

NOTE
The SRS includes the following components: SRS air bag control unit, SRS warning light, front impact sensors, air bag module, side-airbag module, curtain air bag module, side impact sensors, seat belt pre-tensioners, clock spring, and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

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# GENERAL DESCRIPTION

M1552000100522

The heater and cooling units are combined in a single unit, which, with the mode film damper and flow rate control valve in the heater unit, reduces ventilation resistance, increases fan power, and decreases noise.

| Item | Specification |
|---|---|
| Heater control assembly | Dial type |
| Compressor | MSC105CA |
| Compressor model | Scroll type |
| Refrigerant and quantity g (oz) | R-134a (HFC-134a), 530 – 570 (18.7 – 20.1) |

## SAFETY PRECAUTIONS

⚠ ***WARNING***

***Wear safety goggles and gloves when servicing the refrigeration system to prevent severe damage to eyes and hands.***

Because R-134a refrigerant is a hydro fluorocarbon (HFC) which contains hydrogen atoms in place of chlorine atoms, it will not cause damage to the ozone layer.

Ozone filters out harmful radiation from the sun. To assist in protecting the ozone layer, Mitsubishi Motors Corporation recommends an R-134a refrigerant recycling device.

Refrigerant R-134a is transparent and colorless in both the liquid and vapor state. Since it has a boiling point of –29.8°C (–21.64°F) at atmospheric pressure, it will be a vapor at all normal temperatures and pressures. The vapor is heavier than air, non-flammable, and non-explosive. The following precautions must be observed when handling R-134a.

⚠ ***WARNING***

***Do not heat R-134a above 40°C (104.0°F) or it may catch fire and explode.***

R-134a evaporates so rapidly at normal atmospheric pressures and temperatures that it tends to freeze anything it contacts. For this reason, extreme care must be taken to prevent any liquid refrigerant from contacting the skin and especially the eyes. Always wear safety goggles when servicing the refrigeration part of the A/C system. Keep a bottle of sterile mineral oil handy when working on the refrigeration system.

1. Should any liquid refrigerant get into your eyes, use a few drops of mineral oil to wash them out. R-134a is rapidly absorbed by the oil.
2. Next, splash your eyes with plenty of cold water.
3. Call your doctor immediately even if irritation has ceased.

⚠ **CAUTION**

**Keep R-134a containers upright when charging the system.**

In most instances, moderate heat is required to bring the pressure of the refrigerant in its container above the pressure of the system when charging or adding refrigerant.

A bucket or large pan of hot water not over 40°C (104.0°F) is all the heat required for this purpose. Do not heat the refrigerant container with a blow torch or any other means that would raise temperature and pressure above this temperature. Do not weld or steam-clean on or near the system components or refrigerant lines.

⚠ ***WARNING***

***The leak detector for R-134a should be used to check for refrigerant gas leaks.***

⚠ **CAUTION**

**Do not allow liquid refrigerant to touch bright metal or it will be stained.**

When metering R-134a into the refrigeration system, keep the supply tank or cans in an upright position. If the refrigerant container is on its side or upside down, liquid refrigerant will enter the system and damage the compressor.

Refrigerant will tarnish bright metal and chrome surfaces, and in combination with moisture can severely corrode all metal surfaces.

## OPERATION

## CONDENSER FAN AND RADIATOR FAN CONTROL

The ECM <M/T> or PCM <A/T> judges the required revolution speed of radiator fan motor and condenser fan motor using the input signals transmitted from A/C switch, output shaft speed sensor and engine coolant temperature sensor. The PCM activates the fan control relays to drive the radiator fan motor and condenser fan motor.

## COMPRESSOR CONTROL

**When operating the A/C switch**

- The air thermo sensor, which senses the temperature of the air flowing out of the evaporator, deactivates the compressor at 3°C (37.4°F) or below.
- The dual pressure switch turns OFF when the refrigerant pressure becomes excessively high or low, thus protecting the compressor circuit (See Table below).
- When the air thermo sensor is activated, and the ignition switch, blower switch, and A/C switch are ON, the A/C compressor clutch relay is energized.

**When operating the mode selection dial**

- The A/C will work when the mode selection dial is set to the "Defroster" or "Defroster/foot" position, or the temperature control dial is set to the "MAXIMUM A/C" position. In other dial positions, when the A/C switch is turned on, the A/C will work.

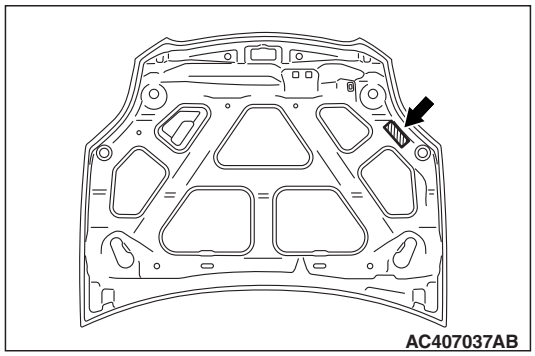
## A/C Compressor Clutch Relay ON Conditions

| | | | |
|---|---|---|---|
| Ignition switch (IG2) | | ON | *NOTE: A/C compressor clutch relay is de-energized when any one switch, sensor or control unit shown on the left turns off.*<br>*NOTE: The components marked by * communicate with the ECM <M/T> or PCM <A/T>. If the air thermo sensor detects a temperature of 3°C (37.4°F), the A/C-ECU will turn off the A/C compressor clutch relay.* |
| Blower speed selection dial | | ON | |
| A/C switch | | ON | |
| Mode selection dial | | defroster | |
| Temperature control dial | | MAXIMUM A/C | |
| Air thermo sensor | | * | |
| Pressure detected by A/C pressure sensor | 2.94 MPa (427 psi) or less [If the refrigerant pressure exceeds 2.94 MPa (427 psi), A/C compressor clutch relay is not ON condition until the refrigerant pressure has been measured up to 2.35 MPa (341 psi) or less.] | ON | |
| | 0.19 MPa (27psi) or more [If the refrigerant pressure falls short of 0.19 MPa (27psi), A/C compressor clutch relay is not ON condition until the refrigerant pressure has been measured up to 0.22 MPa (32psi) or more.] | | |
| A/C compressor clutch relay driving transistor (within ECM <M/T> or PCM <A/T>) | | ON | |

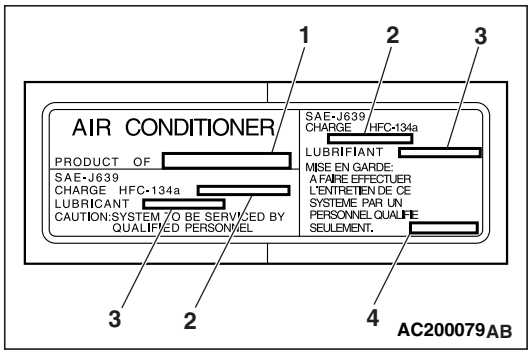
# SERVICE PRECAUTIONS

## CAUTION LABELS

M1552017400161


AC407037AB

The refrigerant gas warning label must be affixed in the location shown in the figure on the left. Follow the instructions on the label when servicing.



AC200079AB

| No. | Contents |
|---|---|
| 1 | Name of A/C manufacturer |
| 2 | Amount of refrigerant |
| 3 | Name of compressor oil |
| 4 | Parts number |

# MANUAL A/C DIAGNOSIS

## INTRODUCTION TO HEATER, AIR CONDITIONING AND VENTILATION DIAGNOSIS

M1552012200366

Air is drawn into the heater assembly from either the outside, or from the inside of the passenger cabin if DEFROST, maximum cooling or RECIRCULATION are selected. The air is then forced through the evaporator where heat is removed, cooling and de-humidifying the air. Depending on the temperature selected, a portion of this air is then forced through the heater core to achieve the selected discharge temperature.

If the system does not cool properly, look for a problem with the refrigerant, blower or air distribution systems. If the system does not heat properly, look for a problem with the coolant, blower or air distribution systems. In either case all system fuses, circuit breaker and relays should be checked.

## HEATER, AIR CONDITIONING AND VENTILATION DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1552009600449

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a heater, air conditioning and ventilation fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart. (Refer to P.55B-105)
4. Verify that the malfunction is eliminated.

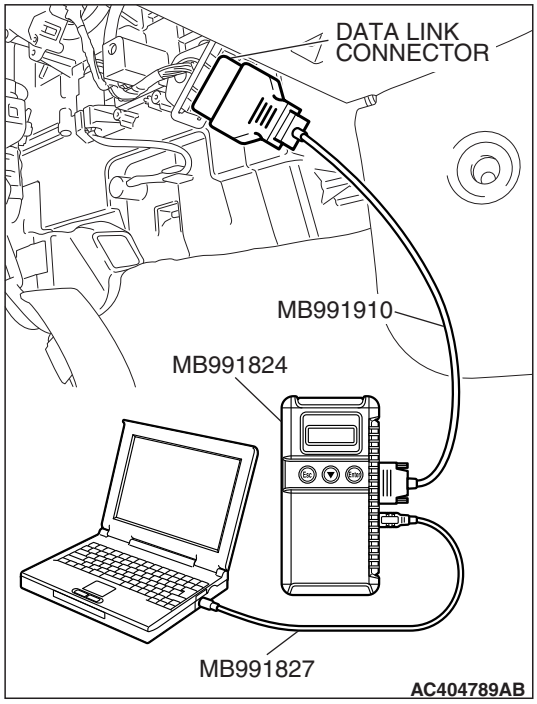
## DIAGNOSTIC FUNCTION

M1552019800091

## HOW TO CONNECT THE SCAN TOOL (M.U.T.-III)

**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

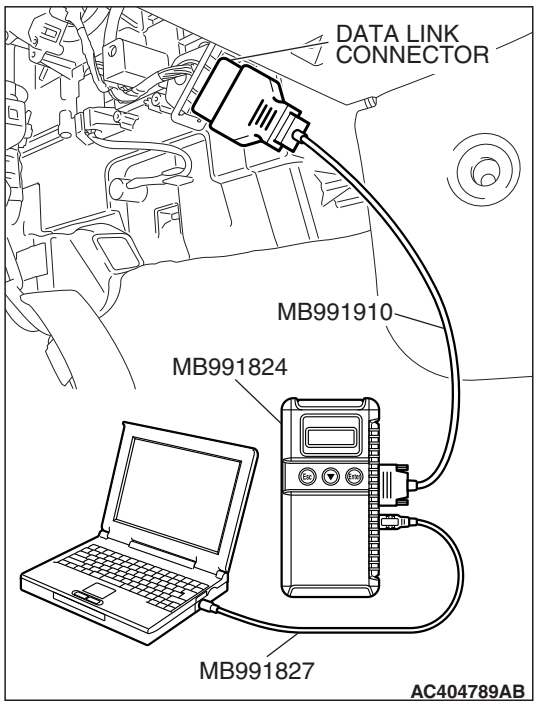
   *NOTE: When the special tool MB991824 is energized, the special tool MB991824 indicator light will be illuminated in a green color.*
7. Start the M.U.T.-III system on the personal computer.

*NOTE: Disconnecting the scan tool special tool MB991824 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.*

## HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

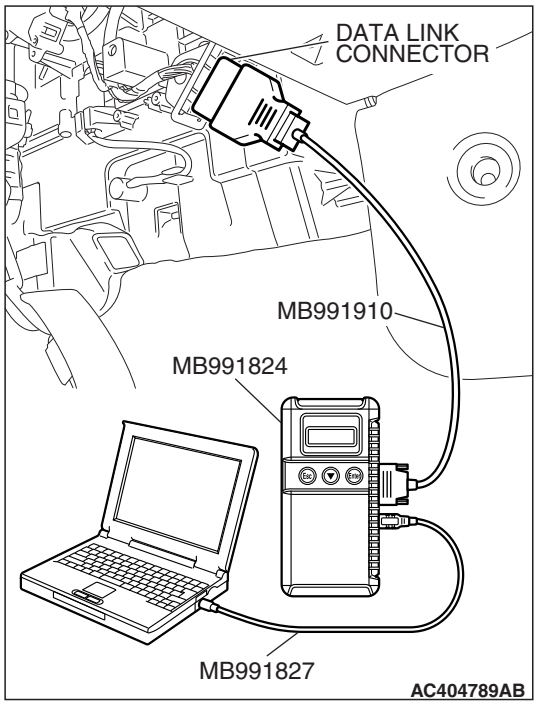
*NOTE: If the battery voltage is low, diagnostic trouble codes will not be output. Check the battery if scan tool MB991958 does not display.*

1. Connect the scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System Select."
5. Choose "Air Conditioner" from the "BODY" tab.
6. Select "MITSUBISHI."
7. Select "Diagnostic Trouble Code" to read the DTC.
8. If a DTC is set, it is shown.
9. Choose "Erase DTC" to erase the DTC.

## HOW TO READ DATA LIST

**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**⚠ CAUTION**

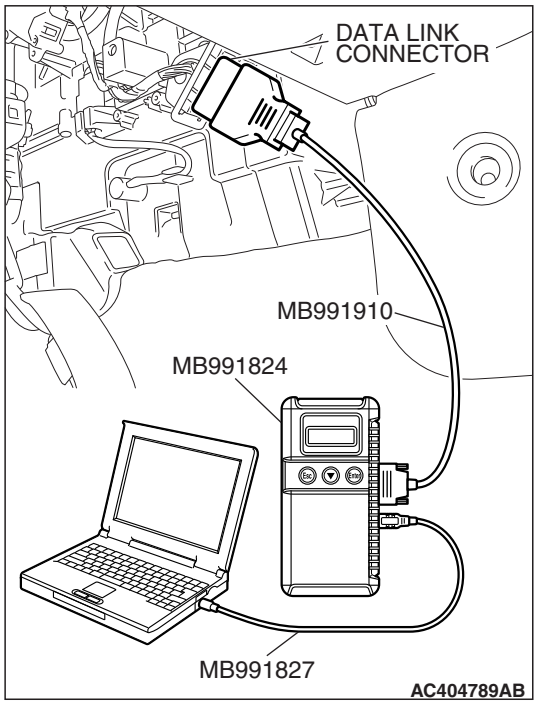
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

1. Connect the scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System Select."
5. Choose "Air Conditioner" from the "BODY" tab.
6. Select "MITSUBISHI."
7. Select "Data List."
8. Choose an appropriate item and select the "OK" button.

## HOW TO PERFORM ACTUATOR TEST

**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**⚠ CAUTION**

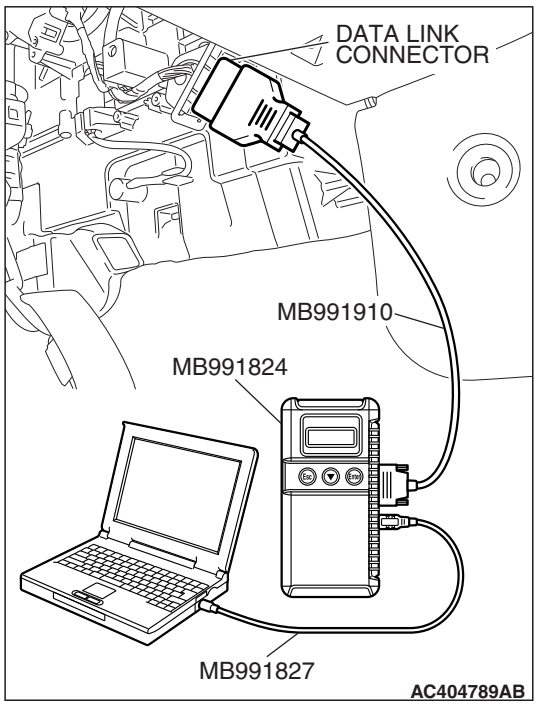
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

1. Connect the scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System Select."
5. Choose "Air Conditioner" from the "BODY" tab.
6. Select "MITSUBISHI."
7. Choose "Actuator Test" from "AUTO A/C" screen.
8. Choose an appropriate item and select the "OK" button.

## HOW TO DIAGNOSE THE CAN BUS LINE

**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "CAN bus diagnosis" from the start-up screen.
4. When the vehicle information is displayed, confirm that it matches the vehicle whose CAN bus lines will be diagnosed.
   - If they match, go to step 8.
   - If not, go to step 5.
5. Select "view vehicle information" button.
6. When the vehicle information is displayed, confirm again that it matches the vehicle which is being diagnosed.
   - If they match, go to step 8.
   - If not, go to step 5.
7. Press the "OK" button.
8. When the options are displayed, choose the options (mark the check) and then select "OK".

## DIAGNOSTIC TROUBLE CODE CHART

M1554004900430

**⚠ CAUTION**

**During diagnosis, a DTC code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion of repairs, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.**

| Diagnostic trouble code No. | Diagnostic item | Reference page |
|---|---|---|
| B1011 | Ambient air temperature sensor system (short circuit) | P.55A-10 |
| B1012 | Ambient air temperature sensor system (open circuit) | P.55A-15 |
| B1021 | Air thermo sensor system (short circuit) | P.55A-22 |
| B1022 | Air thermo sensor system (open circuit) | P.55A-27 |
| B1041 | Air mixing damper control motor and potentiometer (potentiometer system shorted to its power supply) | P.55A-35 |
| B1042 | Air mixing damper control motor and potentiometer (potentiometer system shorted to its ground) | P.55A-41 |
| B1045 | Air mixing damper control motor and potentiometer (activating system failure) | P.55A-49 |
| B1061 | Mode selection damper control motor and potentiometer (potentiometer system shorted to its power supply) | P.55A-65 |
| B1062 | Mode selection damper control motor and potentiometer (potentiometer system shorted to its ground) | P.55A-72 |
| B1065 | Mode selection damper control motor and potentiometer (activating system failure) | P.55A-81 |

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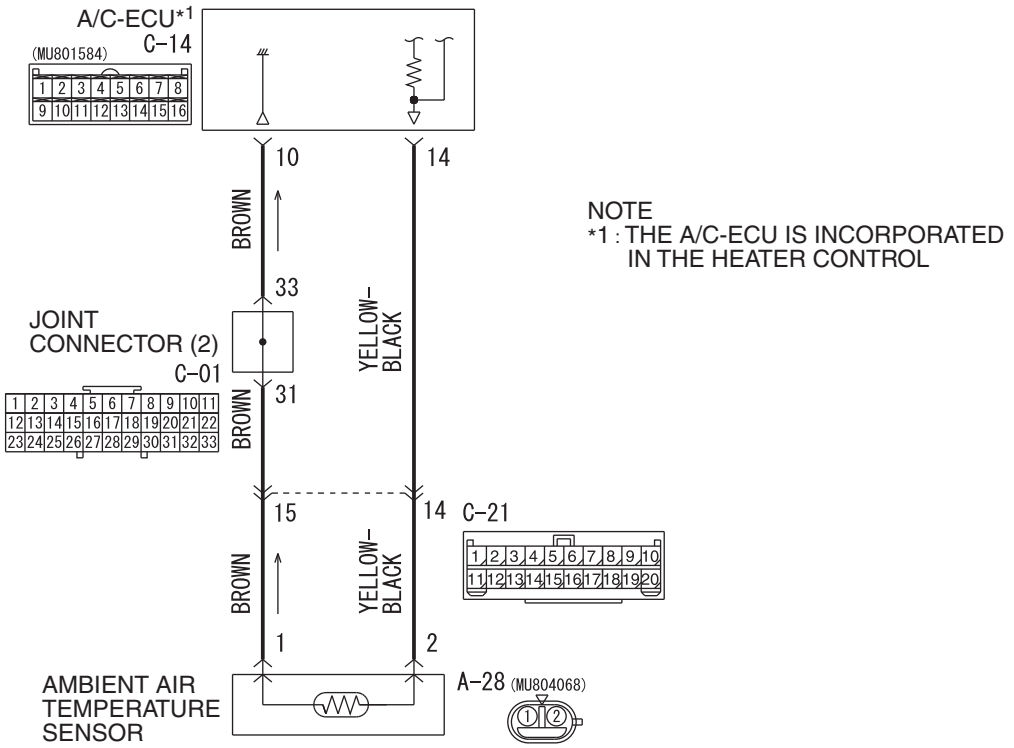
| Diagnostic trouble code No. | Diagnostic item | Reference page |
|---|---|---|
| U1073 | Bus off | P.55A-91 |
| U1100 | ECM <M/T> or PCM <A/T> time-out (related to engine) | P.55A-92 |
| U1111 | Multi-center display unit (middle grade type) time-out | * |
| U1120 | Failure information on ECM <M/T> or PCM <A/T> (related to engine) | P.55A-95 |

*NOTE: *: This diagnostic trouble code will be set even if the system is normal.*

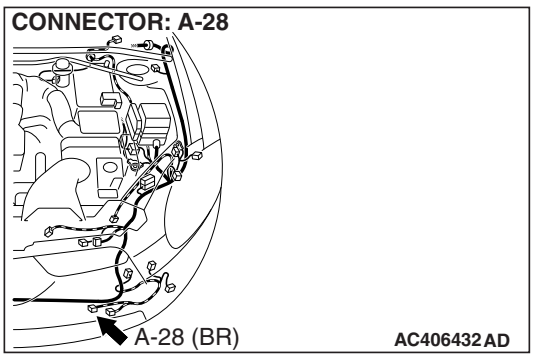
## DIAGNOSTIC TROUBLE CODE PROCEDURES

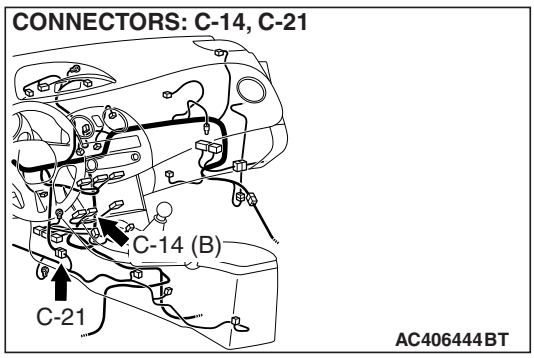
### DTC B1011: Ambient Air Temperature Sensor System (Short Circuit)

**Ambient Air Temperature Sensor Circuit**




WAP55M000A




**TSB Revision**

## FUNCTION

The ambient air temperature sensor has characteristics that the resistance drops when the temperature rises, and it sends the temperature information outside the vehicle to the A/C-ECU to control the temperature.

## DETECTION LOGIC

This code is set when the ambient air temperature sensor circuit (power supply side) is shorted to ground.

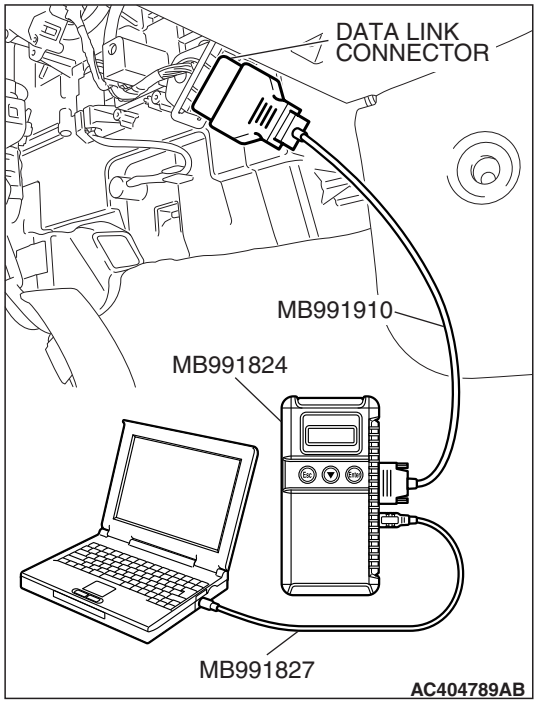
## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the ambient air temperature sensor.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**STEP 1. Using scan tool MB991958, check data list.**

**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
- Item 02: Ambient air temperature sensor
  - Check that the ambient temperature matches the displayed value on the scan tool.

*NOTE: When this DTC is set and the system is in fail-safe status, the value of service data displays 20°C (68°F).*

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the interior temperature match the displayed value on the scan tool?**

**YES :** Go to Step 2.
**NO :** Go to Step 3.

**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

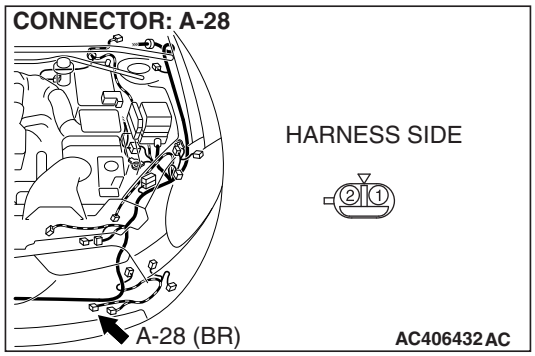
**NO :** Replace the heater control.

**STEP 3. Check ambient air temperature sensor connector A-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is ambient air temperature sensor connector A-28 in good condition?**

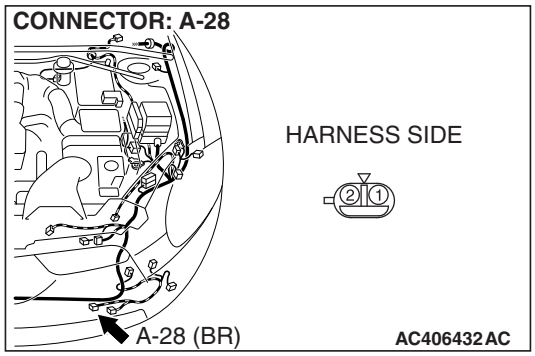
**YES :** Go to Step 4.

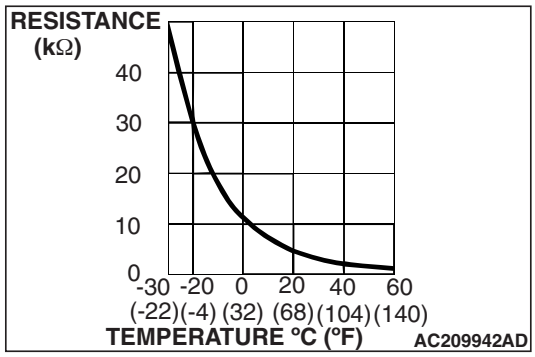
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 4. Check the ambient air temperature sensor.**

(1) Disconnect ambient air temperature sensor connector A-28.




(2) Measure the resistance between the sensor terminals under at least two temperatures. The resistance values should meet the values shown.

*NOTE: The temperature should be within the shown range.*

**Q: Is the ambient air temperature sensor in good condition?**

**YES :** Go to Step 5.

**NO :** Replace the ambient air temperature sensor.

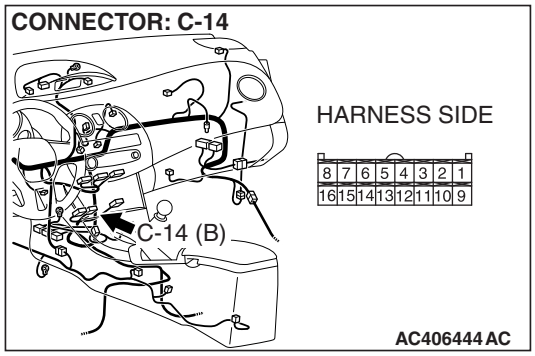
**TSB Revision**

**STEP 5. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connector C-14 in good condition?**

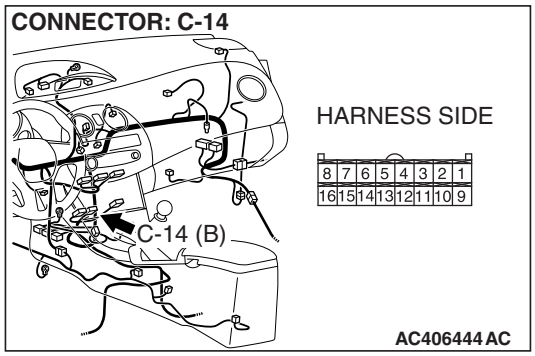
**YES :** Go to Step 6.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 6. Measure the resistance at A/C-ECU connector C-14.**

(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.



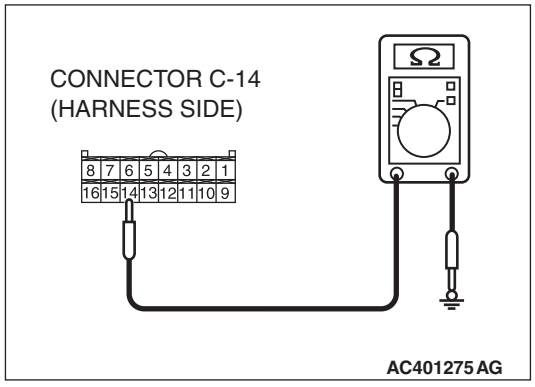

(2) Measure the resistance value between terminal 14 and ground.

**OK: 1kΩ or more**

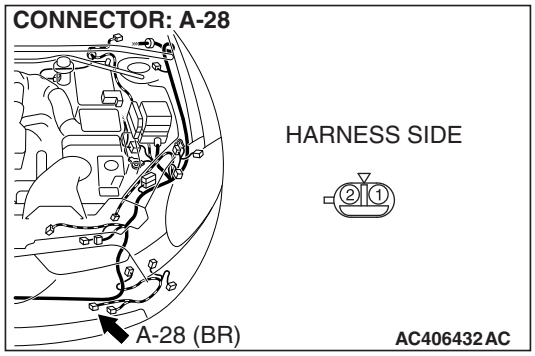
**Q: Does the measured resistance value correspond with this range?**

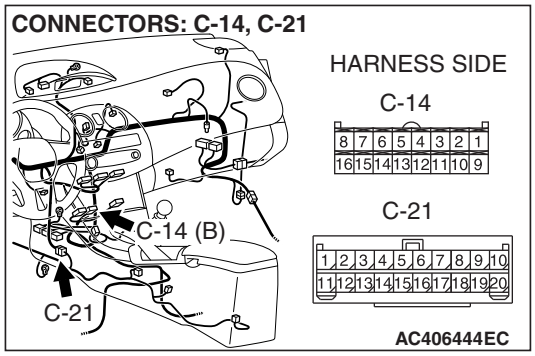
**YES :** Go to Step 8.

**NO :** Go to Step 7.



**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 14) and ambient air temperature sensor connector A-28 (terminal 2).**




*NOTE: Also check intermediate connector C-21 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-21 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 14) and ambient air temperature sensor connector A-28 (terminal 2) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 8. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

**Q: Is the check result satisfactory?**

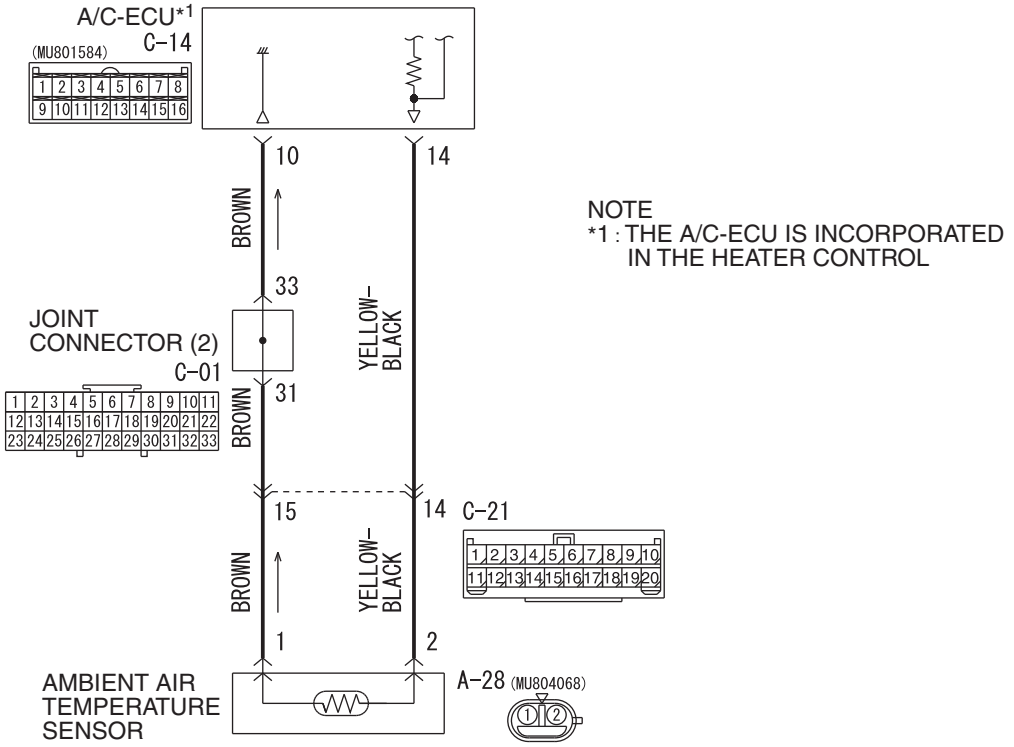
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

**TSB Revision**

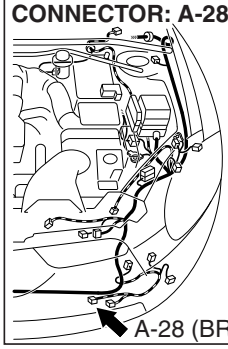
## DTC B1012: Ambient Air Temperature Sensor System (Open Circuit)

**Ambient Air Temperature Sensor Circuit**



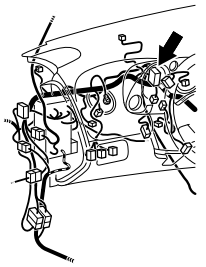

WAP55M000A

**CONNECTOR: A-28**



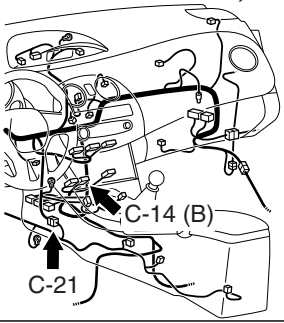

AC406432AD

**CONNECTOR: C-01**



AC406442AT

**CONNECTORS: C-14, C-21**




AC406444BT

**TSB Revision**

## FUNCTION

The ambient air temperature sensor has characteristics that the resistance drops when the temperature rises, and it sends the temperature information outside the vehicle to the A/C-ECU to control the temperature.

## DETECTION LOGIC

This code is set when the ambient air temperature sensor circuit (power supply side and ground side) is open.

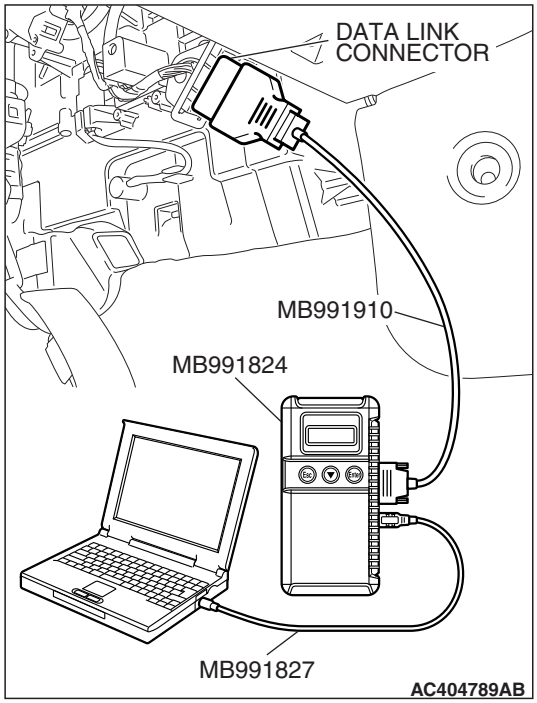
## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the ambient air temperature sensor.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**STEP 1. Using scan tool MB991958, check data list.**

**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
- Item 02: Ambient air temperature sensor
  - Check that the ambient temperature matches the displayed value on the scan tool.

*NOTE: When this DTC is set and the system is in fail-safe status, the value of service data displays 20°C (68°F).*

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the interior temperature match the displayed value on the scan tool?**

**YES :** Go to Step 2.
**NO :** Go to Step 3.

**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

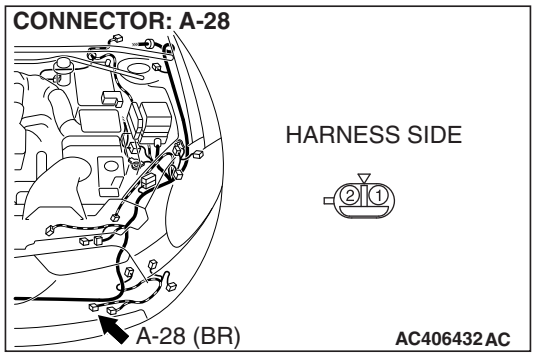
**NO :** Replace the heater control.

**STEP 3. Check ambient air temperature sensor connector A-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is ambient air temperature sensor connector A-28 in good condition?**

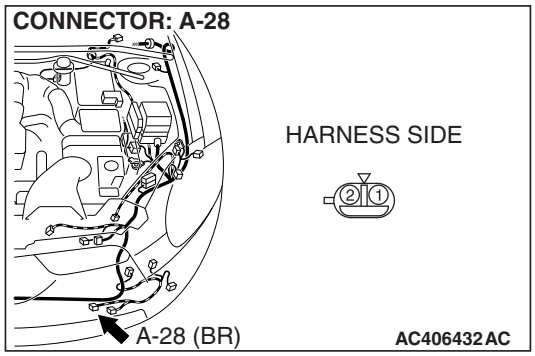
**YES :** Go to Step 4.

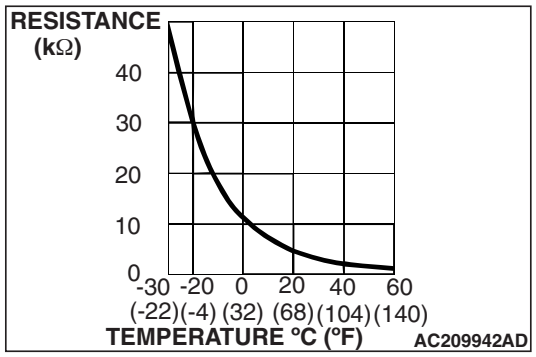
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 4. Check the ambient air temperature sensor.**

(1) Disconnect ambient air temperature sensor connector A-28.




(2) When the resistance between the sensor terminals is measured under two or more temperature conditions, the resistance should approximately satisfy the illustrated values.

*NOTE: The temperature conditions when checking should not exceed the range shown in the diagram.*

**Q: Is the ambient air temperature sensor in good condition?**

**YES :** Go to Step 5.

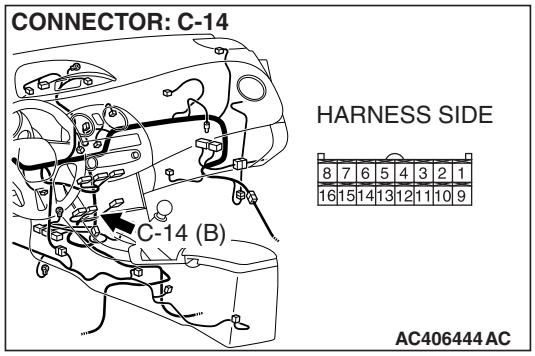
**NO :** Replace the ambient air temperature sensor.

**STEP 5. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connectors C-14 in good condition?**

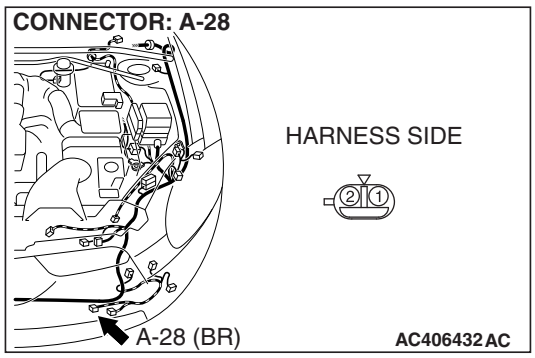
**YES :** Go to Step 6.

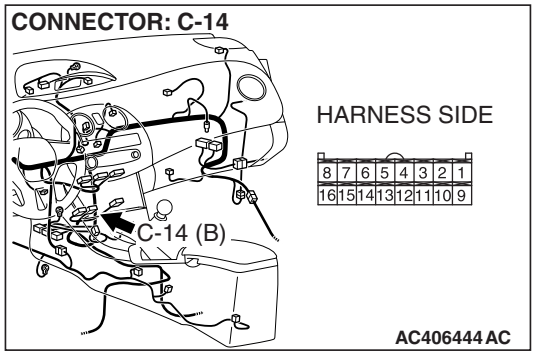
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

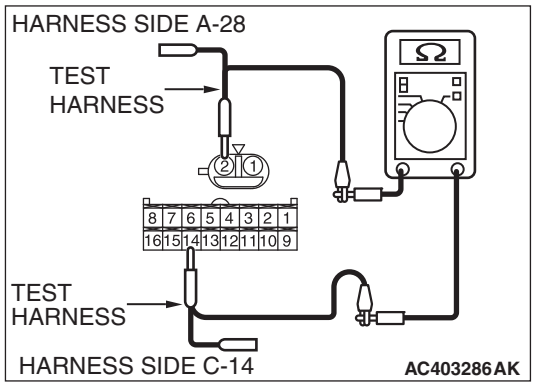



**STEP 6. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and ambient air temperature sensor connector A-28, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C-ECU connector C-14 terminal 14 and ambient air temperature sensor connector A-28 terminal 2.

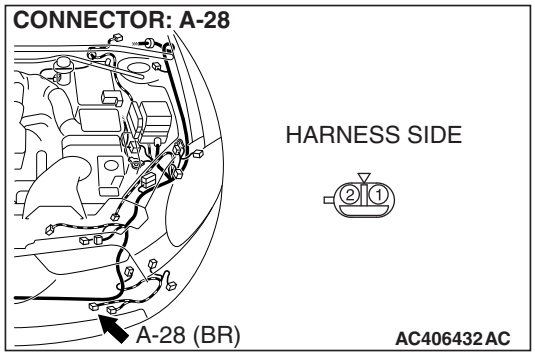
**OK: Less than 2 ohms**

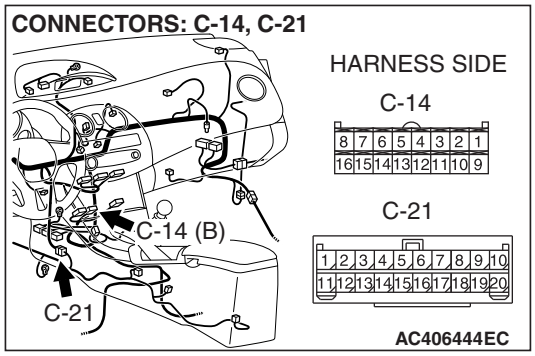
**Q: Is the check result normal?**

**YES :** Go to Step 8.

**NO :** Go to Step 7.

**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 14) and ambient air temperature sensor connector A-28 (terminal 2).**




*NOTE: Also check intermediate connector C-21 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-21 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

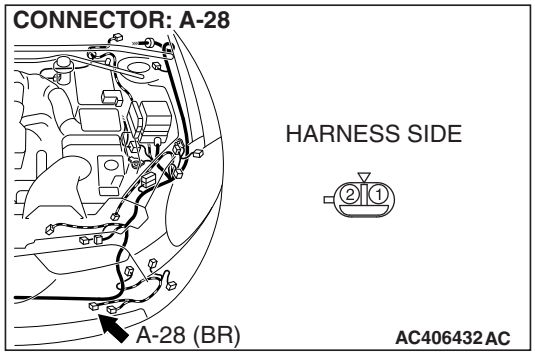
**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 14) and ambient air temperature sensor connector A-28 (terminal 2) in good condition?**

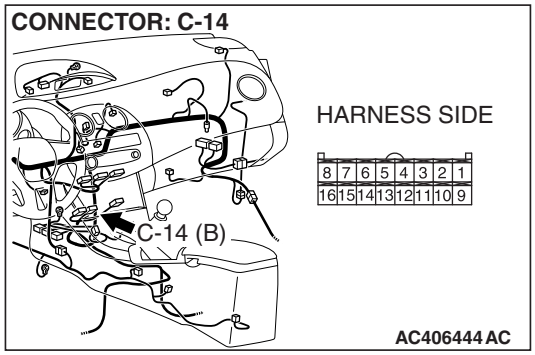
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

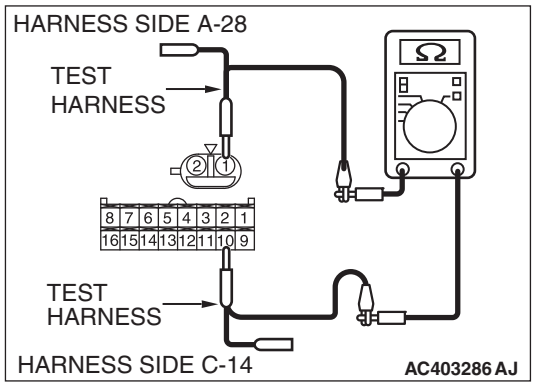
**NO :** Repair the wiring harness.

**STEP 8. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and ambient air temperature sensor connector A-28, and measure the resistance at the wiring harness side.



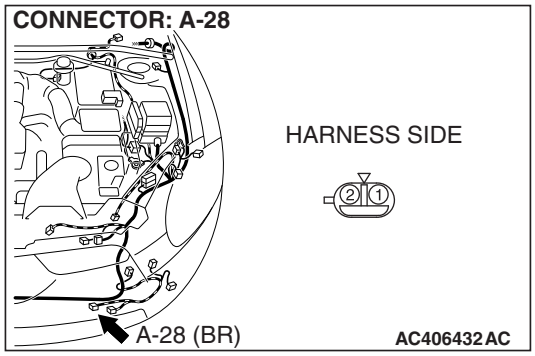

(2) Measure the resistance between A/C-ECU connector C-14 terminal 10 and ambient air temperature sensor connector A-28 terminal 1.

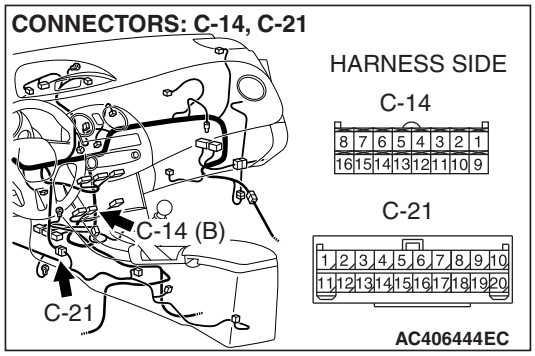
**OK: Less than 2 ohms**

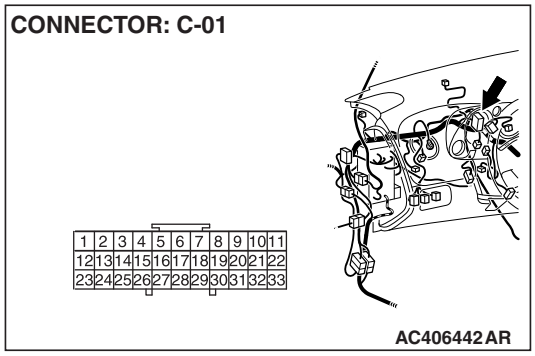
**Q: Is the check result normal?**

**YES :** Go to Step 10.
**NO :** Go to Step 9.

**STEP 9. Check the wiring harness between A/C-ECU connector C-14 (terminal 10) and ambient air temperature sensor connector A-28 (terminal 1).**




*NOTE: Also check intermediate connector C-21 and joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-21 and joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 10) and ambient air temperature sensor connector A-28 (terminal 1) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 10. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

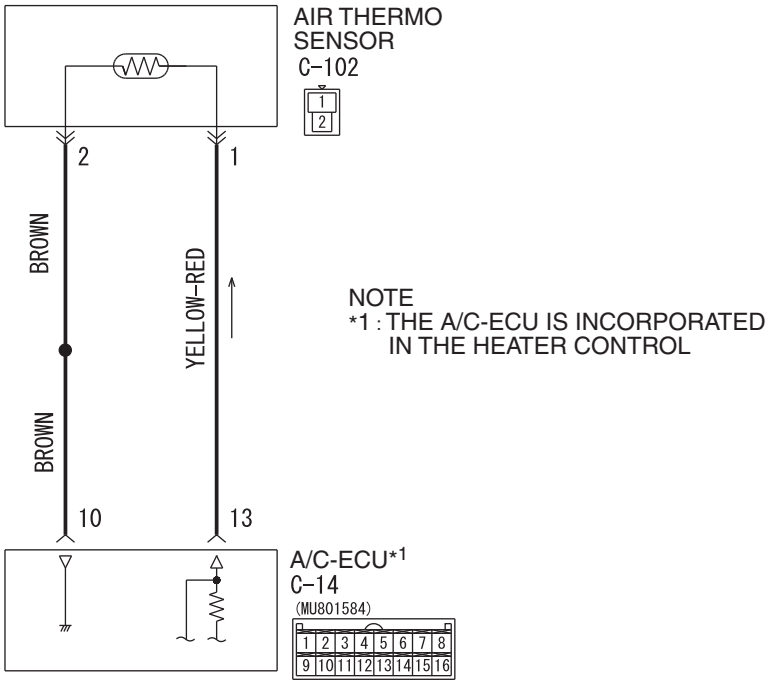
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

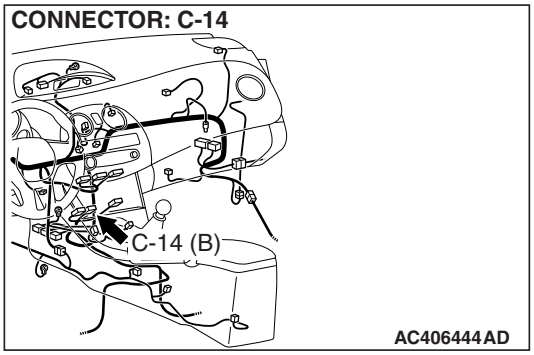
**NO :** Replace the heater control.

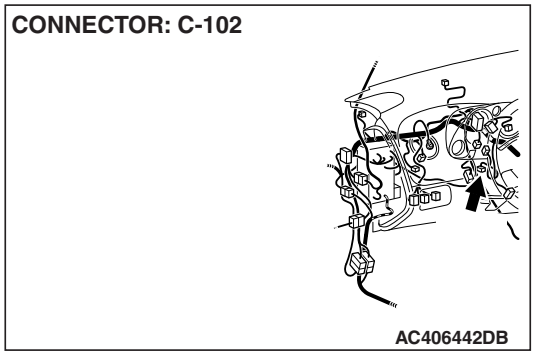
## DTC B1021: Air Thermo Sensor System (Short Circuit)

**Air Thermo Sensor Circuit**




W7P55M001A




## FUNCTION

The air thermo sensor sends the temperature information inside the heater unit to the A/C-ECU and controls the temperature of the air coming out of the vent.

## Detection logic

This code is set when the air thermo sensor circuit (power supply side) is shorted to ground.

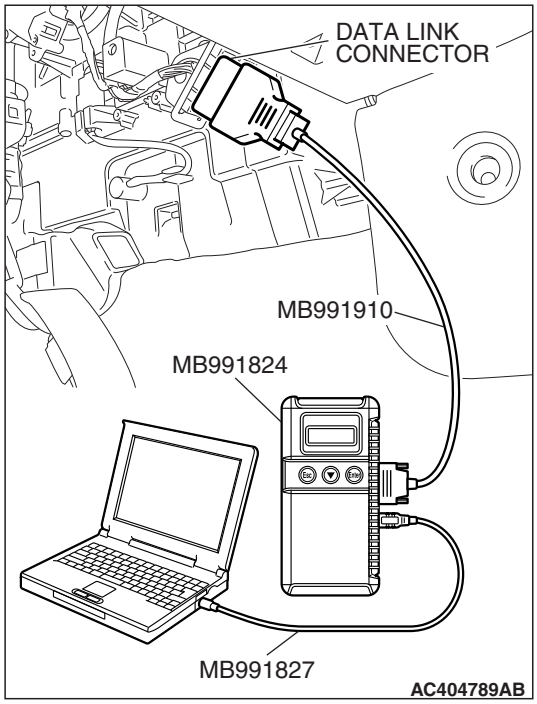
## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the air thermo sensor.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**STEP 1. Using scan tool MB991958, check data list.**

**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
- Item 20: air thermo sensor
  - Check that the temperature behind the evaporator matches the displayed value on the scan tool.

*NOTE: When this DTC is set and the system is in fail-safe status, the value of service data displays –6°C (28°F).*

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the sensor within the specified range?**

**YES :** Go to Step 2.
**NO :** Go to Step 3.

**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

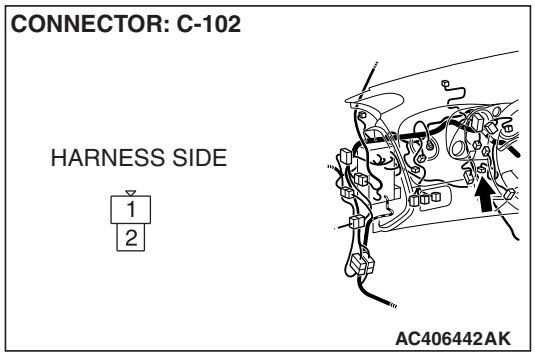
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the heater control.

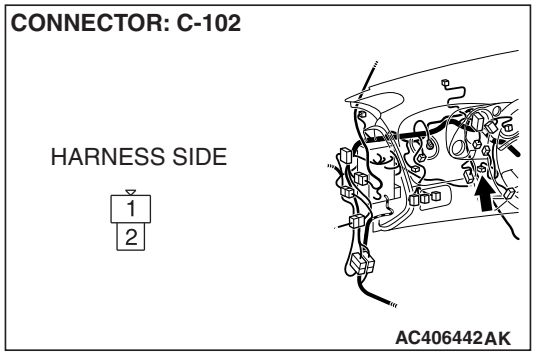
**STEP 3. Check air thermo sensor connector C-102 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is air thermo sensor connector C-102 in good condition?**

**YES :** Go to Step 4.
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

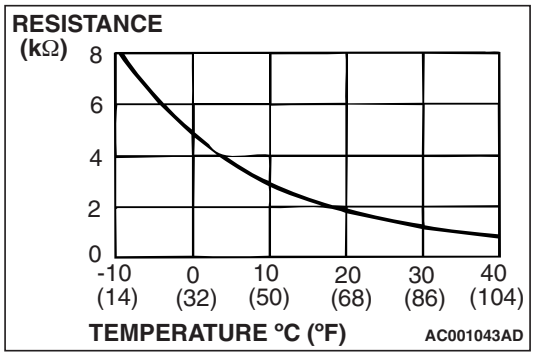



**TSB Revision**




**STEP 4. Check the air thermo sensor.**

(1) Disconnect the air thermo sensor connector C-102.




(2) Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

*NOTE: The temperature at the check should not exceed the range in the graph.*

**Q: Is the air thermo sensor in good condition?**

**YES :** Go to Step 5.

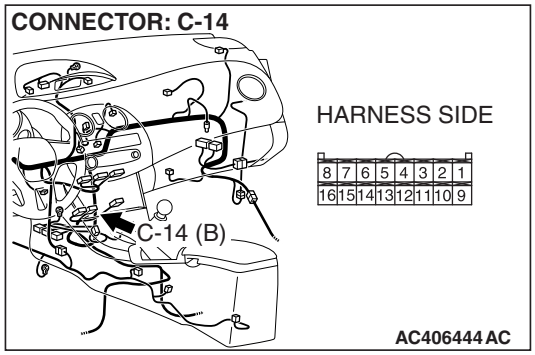
**NO :** Replace the air thermo sensor.

**STEP 5. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connector C-14 in good condition?**

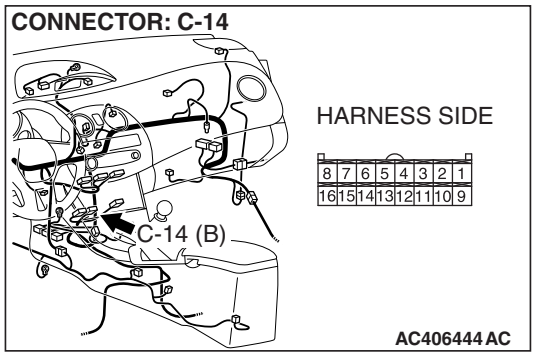
**YES :** Go to Step 6.

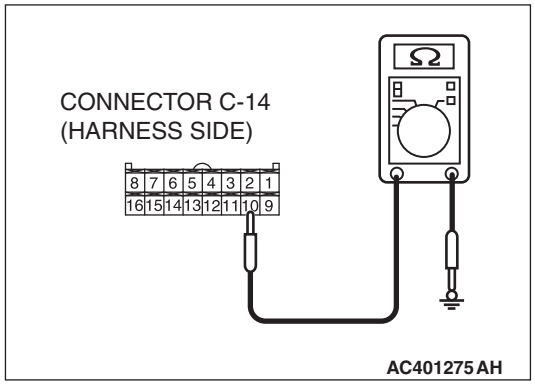
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



**STEP 6. Measure the resistance at A/C-ECU connector C-14.**

(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.




(2) Measure the resistance value between terminal 10 and ground.

**OK: 1kΩ or more**

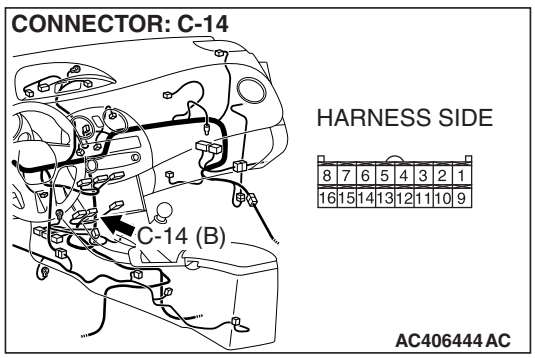
**Q: Does the measured resistance value correspond with this range?**

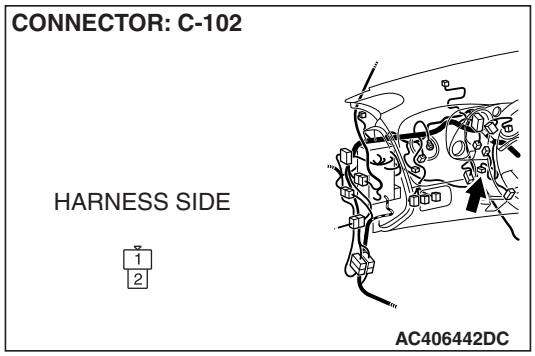
**YES :** Go to Step 8.
**NO :** Go to Step 7.

**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 10) and air thermo sensor connector C-102 (terminal 2).**

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 10) and air thermo sensor connector C-102 (terminal 2) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.



**STEP 8. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

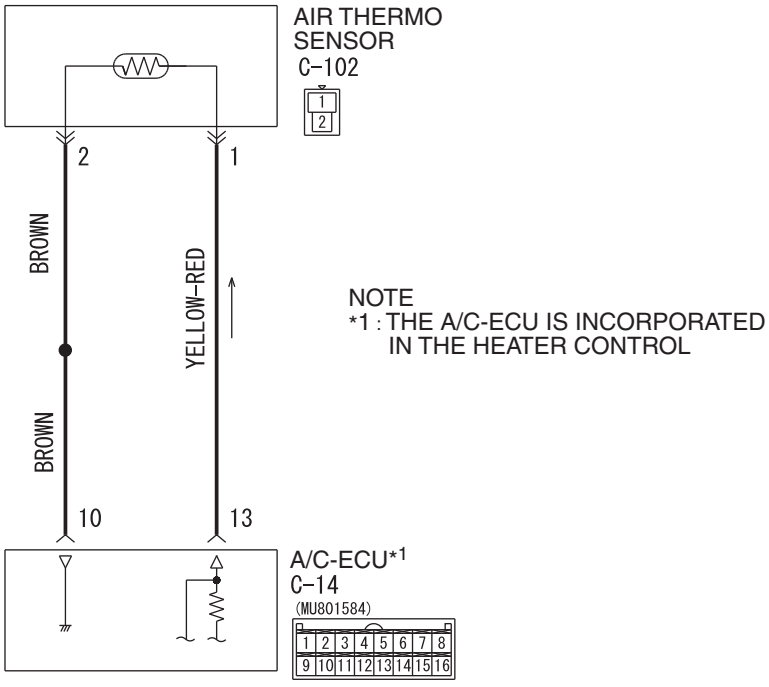
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

## DTC B1022: Air Thermo Sensor System (Open Circuit)

**Air Thermo Sensor Circuit**

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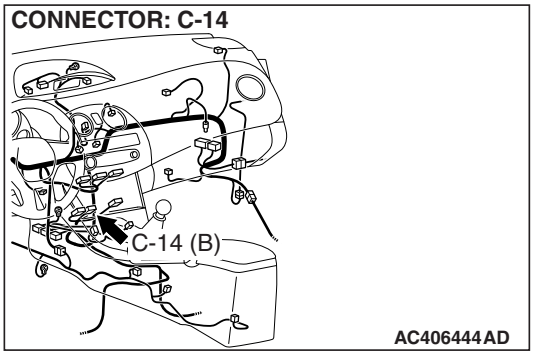
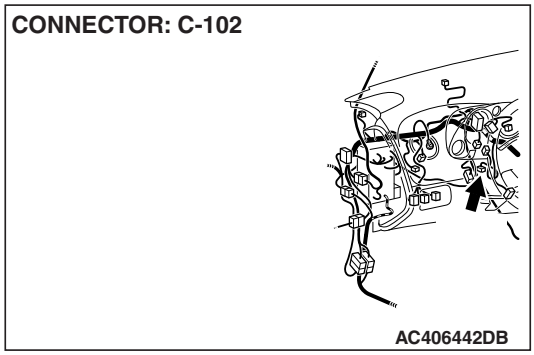



## FUNCTION

The air thermo sensor sends the temperature information inside the heater unit to the A/C-ECU and controls the temperature of the air coming out of the vent.

## DETECTION LOGIC

This code is set when the air thermo sensor circuit is open (power supply side and ground side).

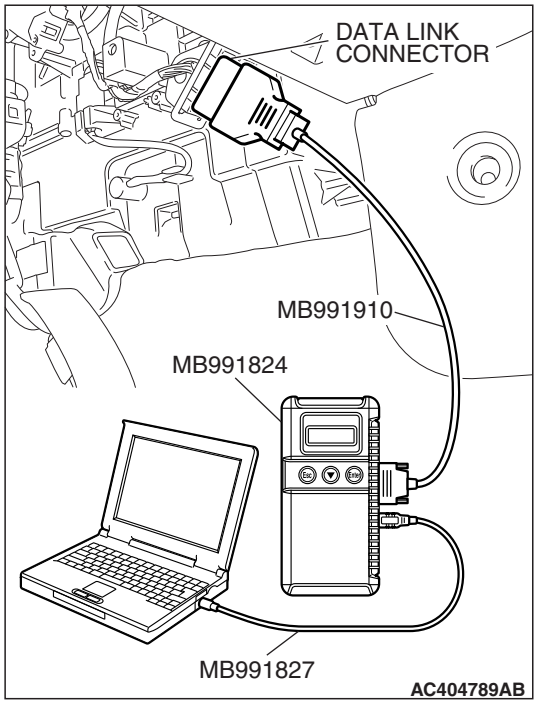
## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the air thermo sensor.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**STEP 1. Using scan tool MB991958, check data list.**

**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
- Item 20: air thermo sensor
  - Check that the temperature behind the evaporator matches the displayed value on the scan tool.

*NOTE: When this DTC is set and the system is in fail-safe status, the value of service data displays –6°C (28°F).*

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the sensor within the specified range?**

**YES :** Go to Step 2.
**NO :** Go to Step 3.

**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

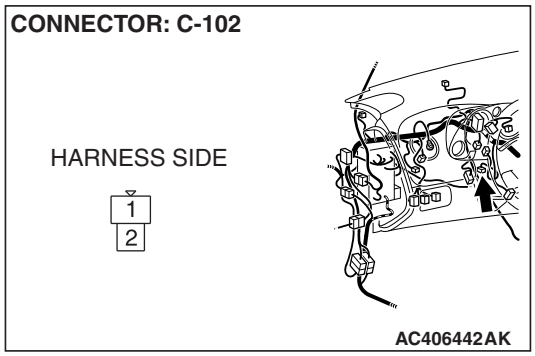
**Q: Is the check result satisfactory?**

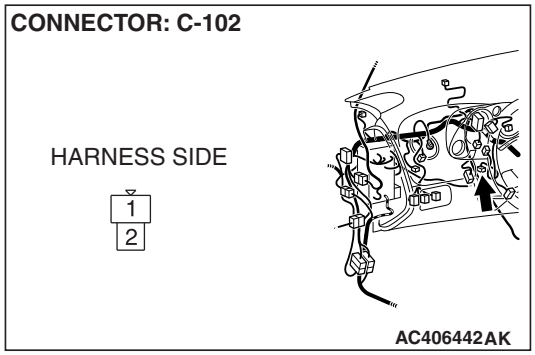
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the heater control.

**STEP 3. Check air thermo sensor connector C-102 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is air thermo sensor connector C-102 in good condition?**

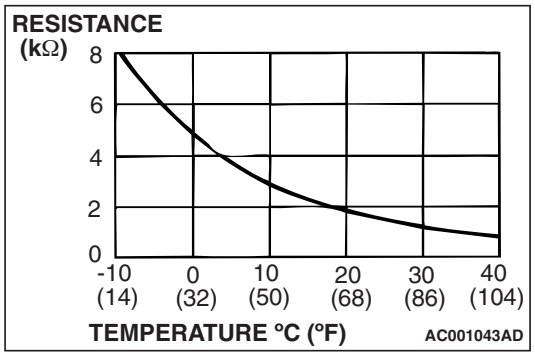
**YES :** Go to Step 4.
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.






**STEP 4. Check the air thermo sensor.**

(1) Disconnect the air thermo sensor connector C-102.




(2) Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

*NOTE: The temperature at the check should not exceed the range in the graph.*

**Q: Is the air thermo sensor in good condition?**

**YES :** Go to Step 5.

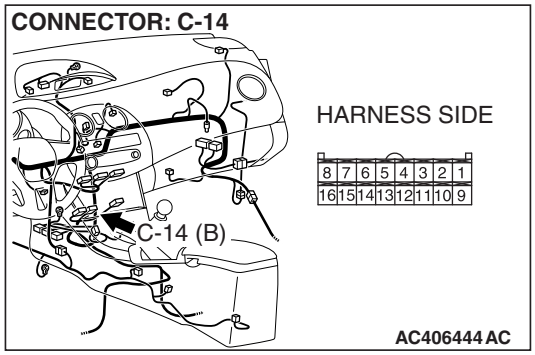
**NO :** Replace the air thermo sensor.

**STEP 5. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connectors C-14 in good condition?**

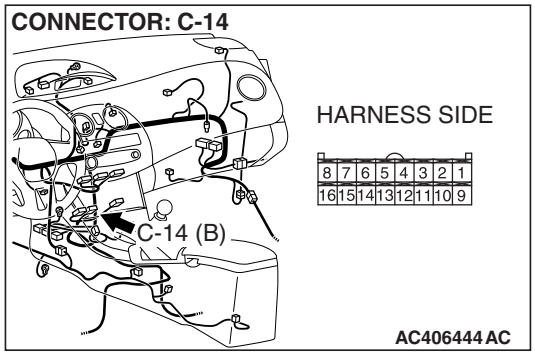
**YES :** Go to Step 6.

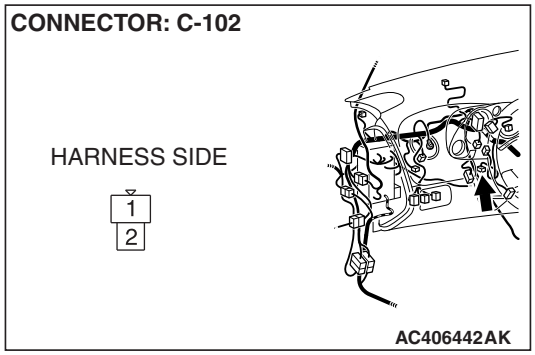
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

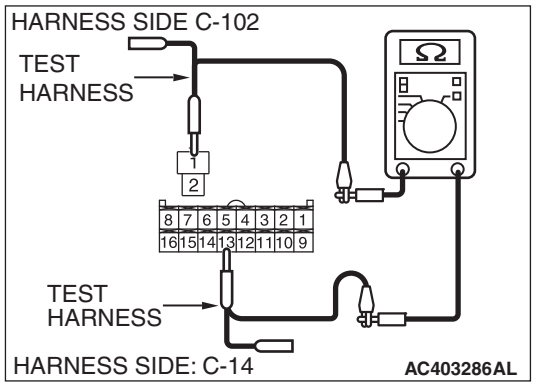


**STEP 6. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and air thermo sensor connector C-102, and measure the resistance at the wiring harness side.



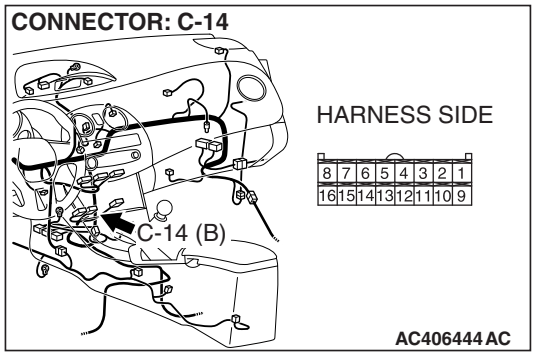



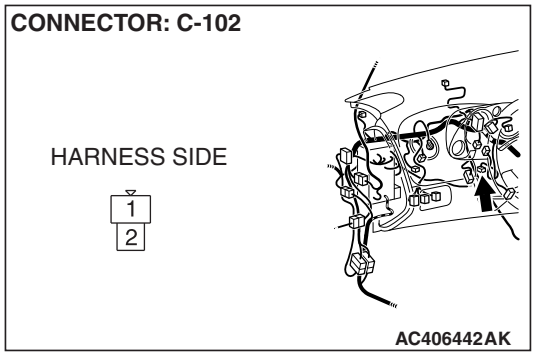

(2) Measure the resistance between A/C-ECU connector C-14 terminal 13 and air thermo sensor connector C-102 terminal 1.

**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 8.
**NO :** Go to Step 7.




**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 13) and air thermo sensor connector C-102 (terminal 1).**

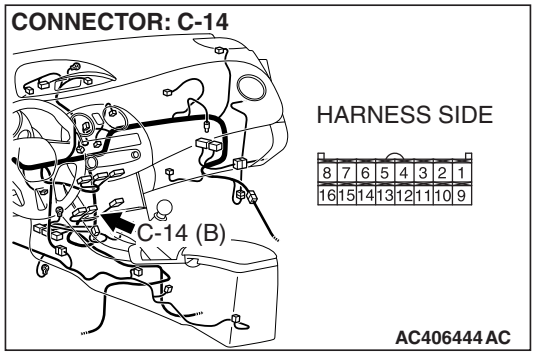
**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 13) and air thermo sensor connector C-102 (terminal 1) in good condition?**

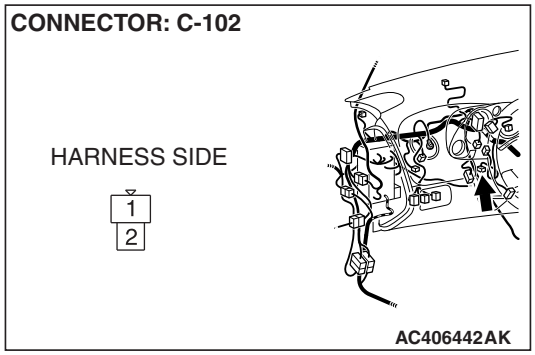
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

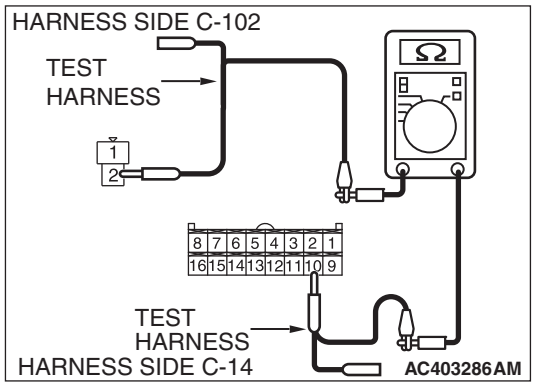
**NO :** Repair the wiring harness.

**STEP 8. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and air thermo sensor connector C-102, and measure the resistance at the wiring harness side.



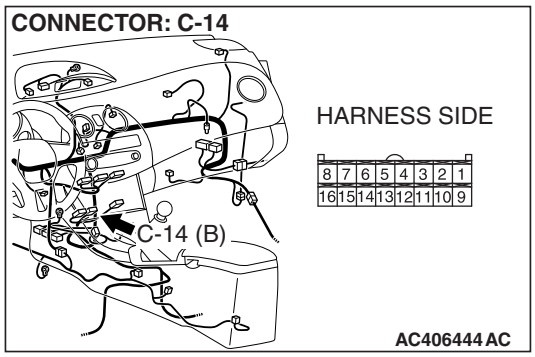



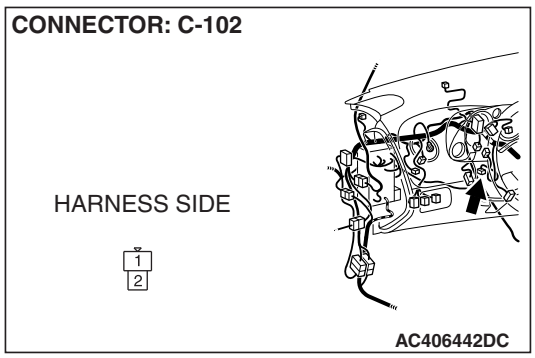

(2) Measure the resistance between A/C-ECU connector C-14 terminal 10 and air thermo sensor connector C-102 terminal 2.

**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 10.
**NO :** Go to Step 9.




**STEP 9. Check the wiring harness between A/C-ECU connector C-14 (terminal 10) and air thermo sensor connector C-102 (terminal 2).**

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 10) and air thermo sensor connector C-102 (terminal 2) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 10. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

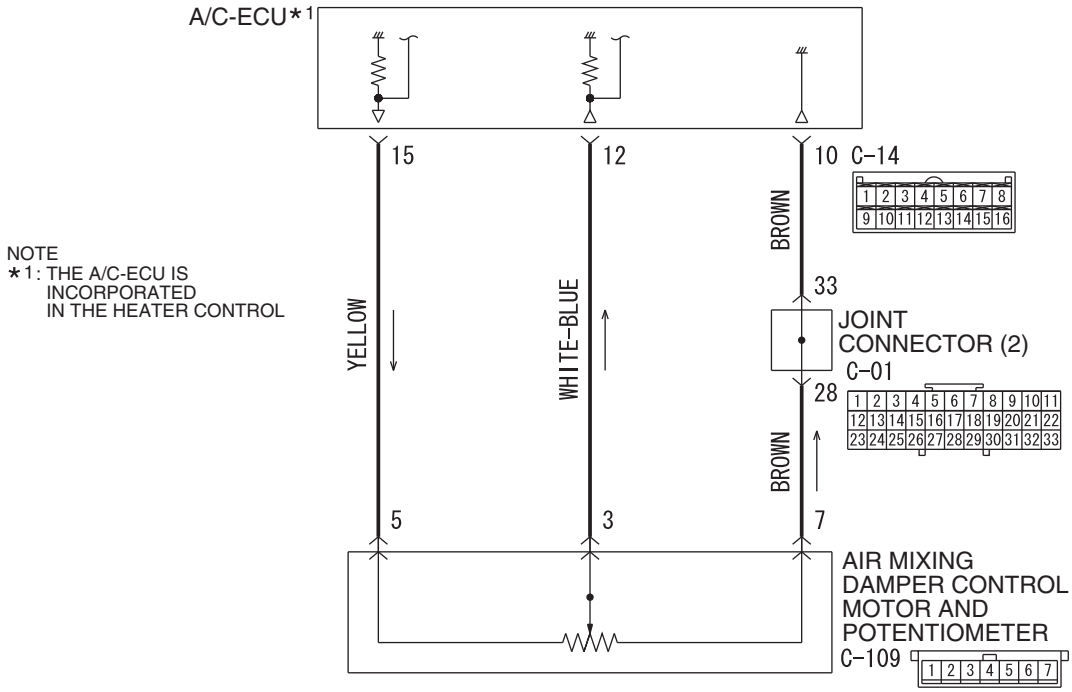
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

## DTC B1041: Air Mixing Damper Control Motor and Potentiometer (Potentiometer system shorted to its power supply)

**Air Mixing Damper Control Motor Potentiometer**

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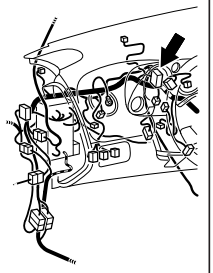
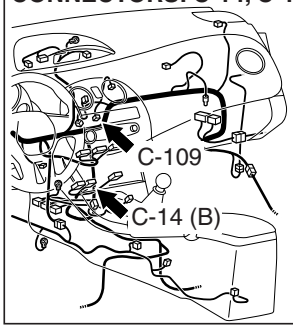
**CONNECTOR: C-01**



AC406442AT

**CONNECTORS: C-14, C-109**




AC406444AF

## FUNCTION

Detect the position of air mixing damper from the drive motor.

## DETECTION LOGIC

This code is set when the air mixing damper control motor and potentiometer do not send any signal to the A/C-ECU due to short to power supply of the air mixing damper control motor and potentiometer circuit.

## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness (air mixing damper control motor and potentiometer circuit is open/shorted to its power supply)
- Malfunction of the air mixing damper control motor and potentiometer.
- Malfunction of the A/C-ECU.

**TSB Revision**

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**STEP 1. Using scan tool MB991958, check data list.**

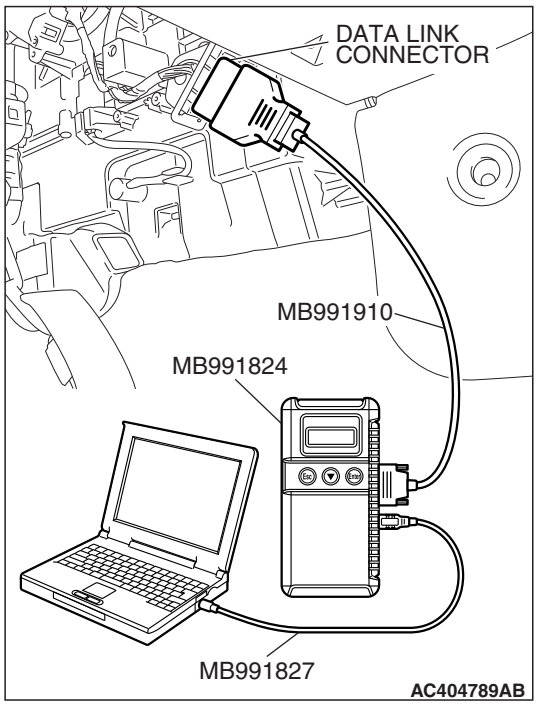
**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
  - Item 63: Air mix potentiometer
  - Item 64: Air mix potentiometer (Target)

*NOTE: Check that the set position of the heater control matches the displayed position on the scan tool.*

(4) Turn the ignition switch to the "LOCK" (OFF) position.




**Q: Does the heater control set position match the scan tool displayed position?**

**YES :** Go to Step 2.
**NO :** Go to Step 3.

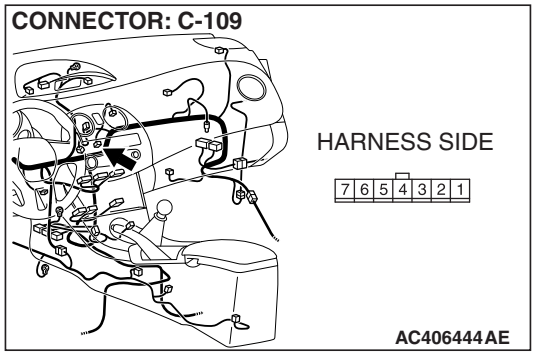
**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the heater control.

**STEP 3. Check air mixing damper control motor and potentiometer connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**




**Q: Is air mixing damper control motor and potentiometer connector C-109 in good condition?**

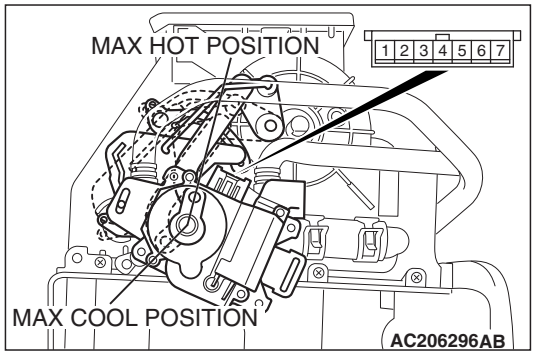
**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

**STEP 4. Check the air mixing damper control motor and potentiometer.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the MAX COOL or MAX HOT position.**




(1) Operate the air mixing damper control motor as described in the table below.

| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the MAX COOL position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the MAX COOL position to the MAX HOT position |
| At the MAX HOT position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the MAX HOT position to the MAX COOL position |

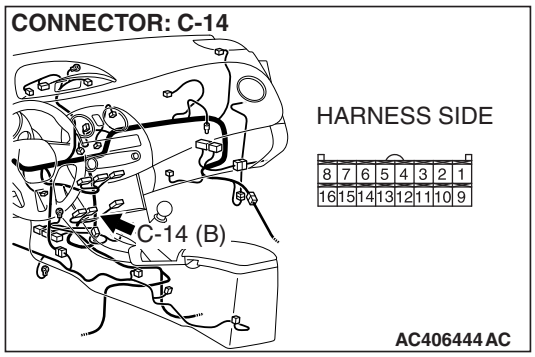
(2) Measure the resistances between connector terminals 3 and 5, and between 3 and 7, while the air mixing damper control motor is running. The resistances should change gradually within the standard value.

**Standard value: 1.7 (MAX HOT) – 5.0 (MAX COOL) kΩ**

**Q: Are the air mixing damper control motor and potentiometer in good condition?**

**YES :** Go to Step 5.

**NO :** Replace the air mixing damper control motor and potentiometer.

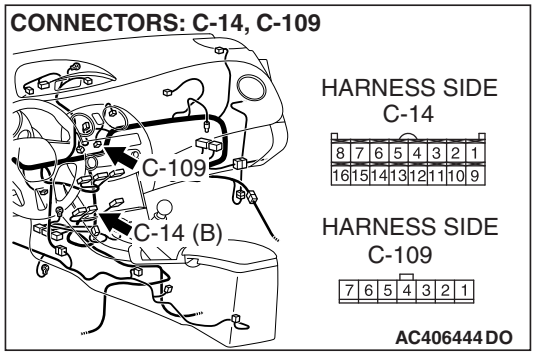



**STEP 5. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connector C-14 in good condition?**

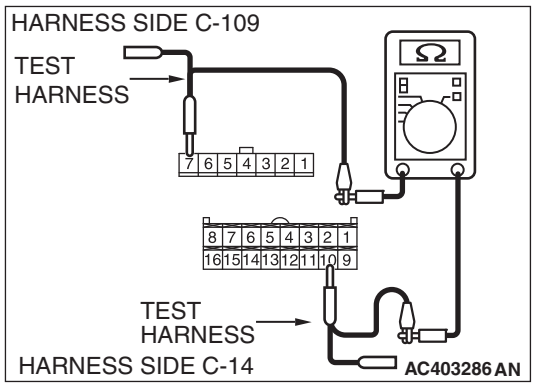
**YES :** Go to Step 6.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 6. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and air mixing damper control motor and potentiometer connector C-109, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C-ECU connector C-14 terminal 10 and air mixing damper control motor and potentiometer connector C-109 terminal 7.

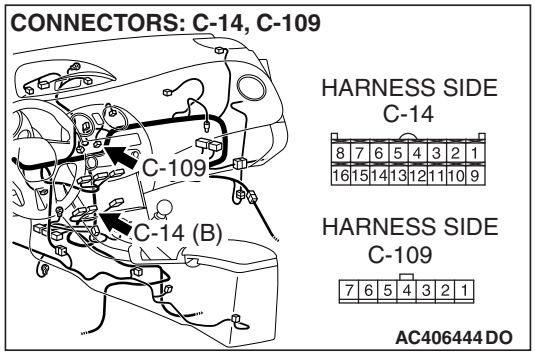
**OK: Less than 2 ohms**

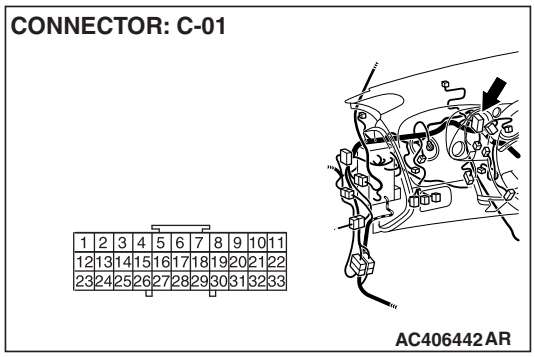
**Q: Is the check result normal?**

**YES :** Go to Step 8.

**NO :** Go to Step 7.

**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 10) and air mixing damper control motor and potentiometer connector C-109 (terminal 7).**



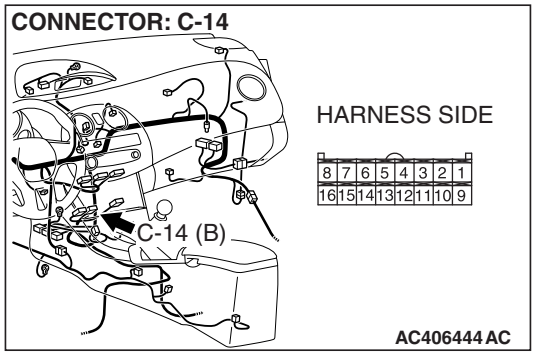




*NOTE: Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 10) and air mixing damper control motor and potentiometer connector C-109 (terminal 7) in good condition?**

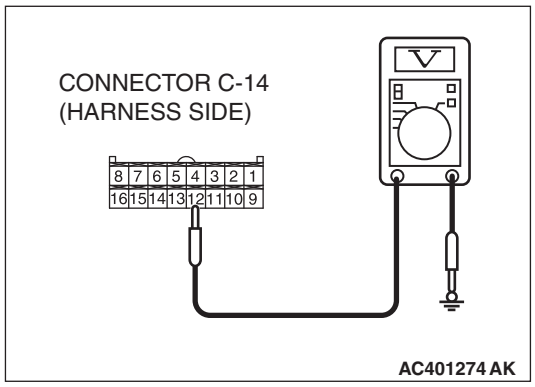
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.




**STEP 8. Measure the voltage at A/C-ECU connector C-14.**

(1) Disconnect A/C-ECU connector C-14, and measure the voltage at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.
(3) Turn the temperature control dial to the MAX HOT position.



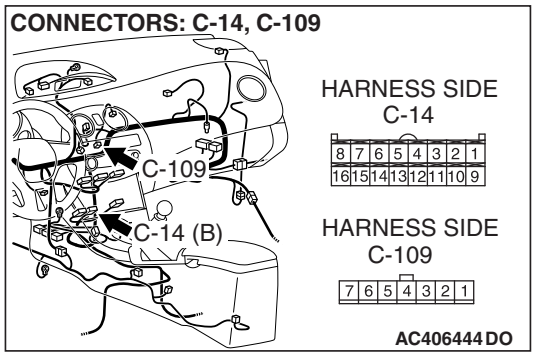

(4) Measure the voltage between terminal 12 and ground.

**OK: 1.3 – 1.5 volts**

**Q: Is the check result normal?**

**YES :** Go to Step 10.
**NO :** Go to Step 9.

**STEP 9. Check the wiring harness between A/C-ECU connector C-14 (terminal 12) and air mixing damper control motor and potentiometer connector C-109 (terminal 3).**




**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 12) and air mixing damper control motor and potentiometer connector C-109 (terminal 3) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 10. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

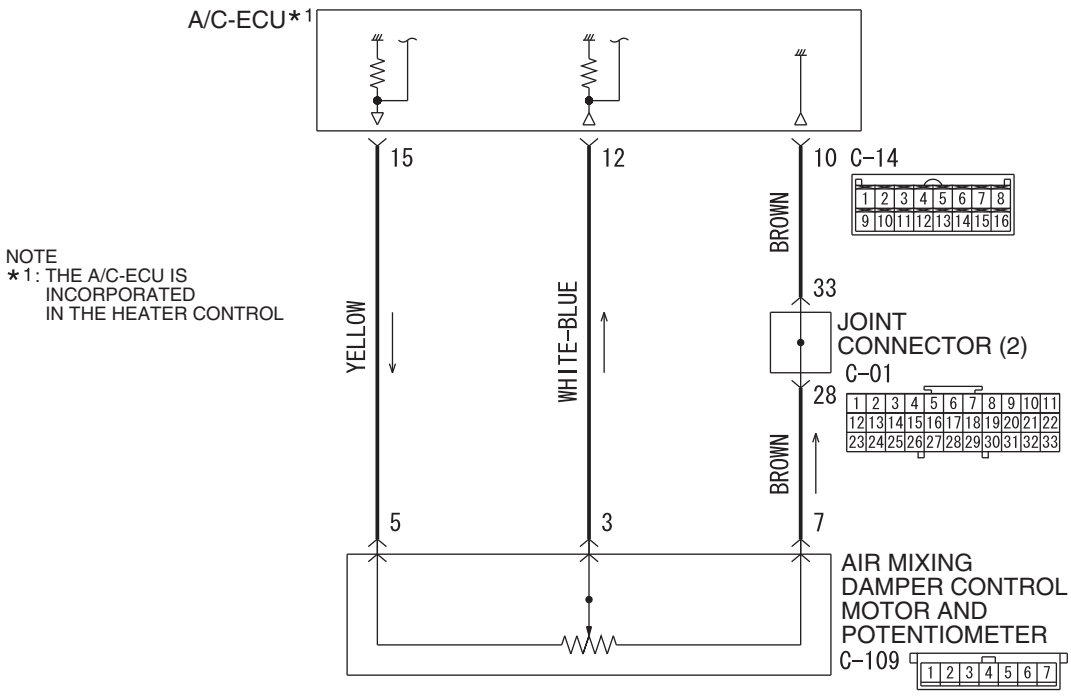
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

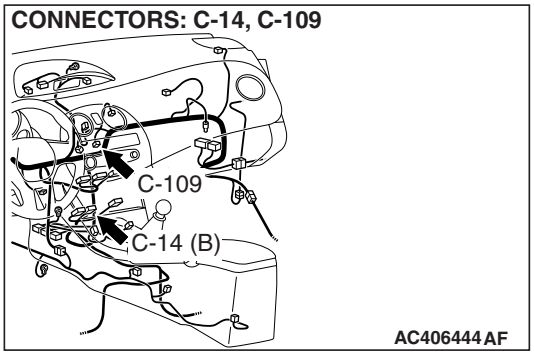
**NO :** Replace the heater control.

## DTC B1042: Air Mixing Damper Control Motor and Potentiometer (Potentiometer system shorted to its ground)

**Air Mixing Damper Control Motor Potentiometer**




W6P55M004A




## FUNCTION

Read the position of air mixing damper from the drive motor.

## DETECTION LOGIC

This code is set when the air mixing damper control motor and potentiometer do not send any signal to the A/C-ECU due to an open circuit and short to ground of the air mixing damper control motor and potentiometer circuit.

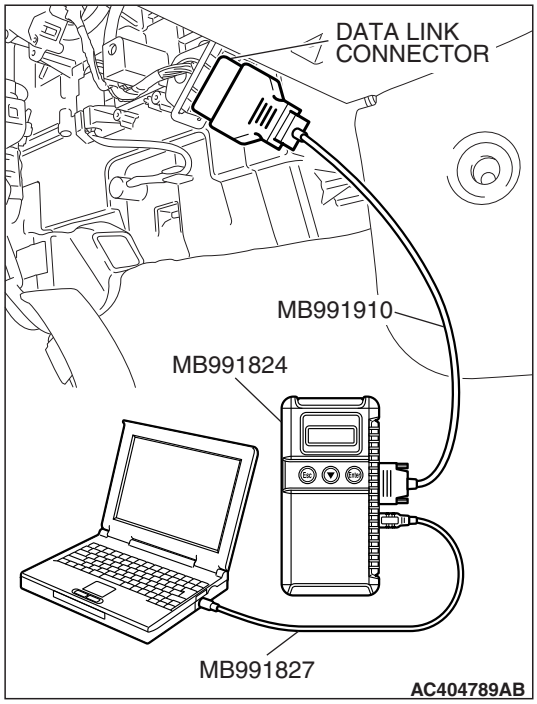
## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness (Air mixing damper control motor and potentiometer circuit is open/shorted to ground)
- Malfunction of the Air mixing damper control motor and potentiometer.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**STEP 1. Using scan tool MB991958, check data list.**

**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
- Item 63: Air mix potentiometer
- Item 64: Air mix potentiometer (Target)

*NOTE: Check that the set position of the heater control matches the displayed position on the scan tool.*

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the heater control set position match the scan tool displayed position?**

**YES :** Go to Step 2.
**NO :** Go to Step 3.

**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

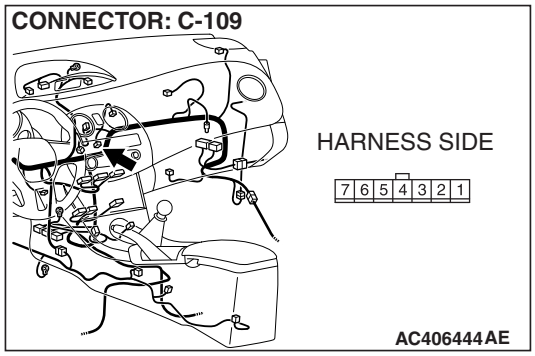
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the heater control.

**STEP 3. Check air mixing damper control motor and potentiometer connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is air mixing damper control motor and potentiometer connector C-109 in good condition?**

**YES :** Go to Step 4.
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

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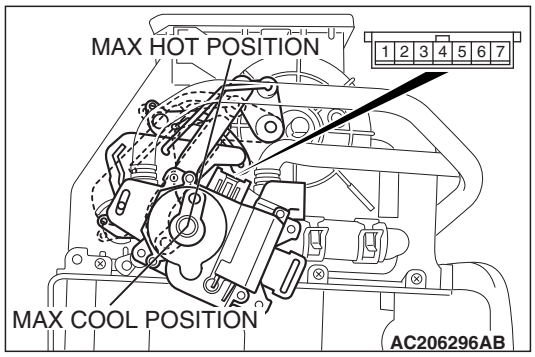



**STEP 4. Check the air mixing damper control motor and potentiometer.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the MAX COOL or MAX HOT position.**

(1) Operate the air mixing damper control motor as described in the table below.

| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the MAX COOL position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the MAX COOL position to the MAX HOT position |
| At the MAX HOT position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the MAX HOT position to the MAX COOL position |

(2) Measure the resistances between connector terminals 3 and 5, and between 3 and 7, while the air mixing damper control motor is running. The resistances should change gradually within the standard value.

**Standard value: 1.7 (MAX HOT) – 5.0 (MAX COOL) kΩ**

**Q: Are the air mixing damper control motor and potentiometer in good condition?**

**YES :** Go to Step 5.

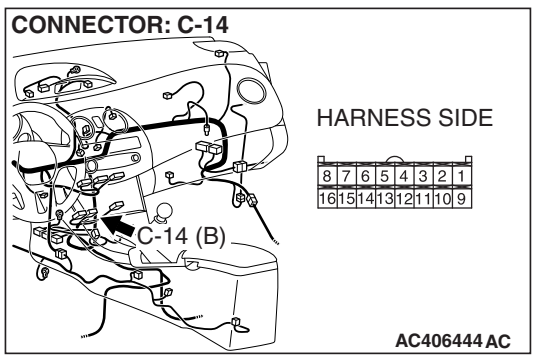
**NO :** Replace the air mixing damper control motor and potentiometer.

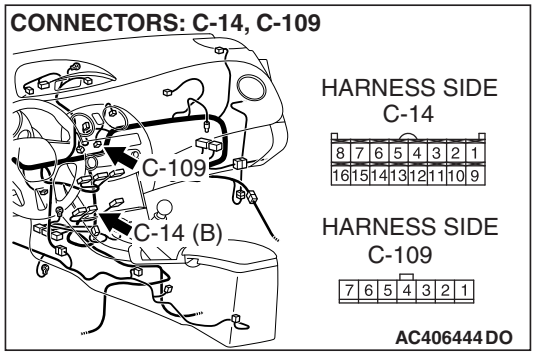
**STEP 5. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connector C-14 in good condition?**

**YES :** Go to Step 6.

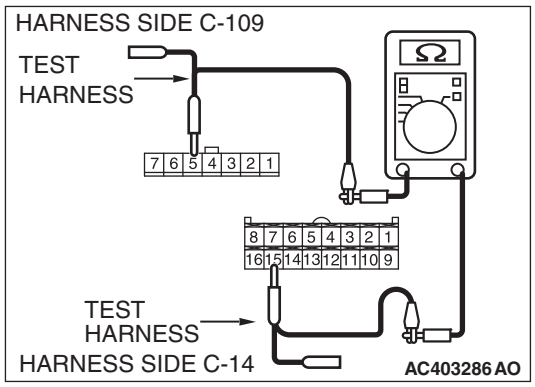
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.






**STEP 6. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and air mixing damper control motor and potentiometer connector C-109, and measure the resistance at the wiring harness side.



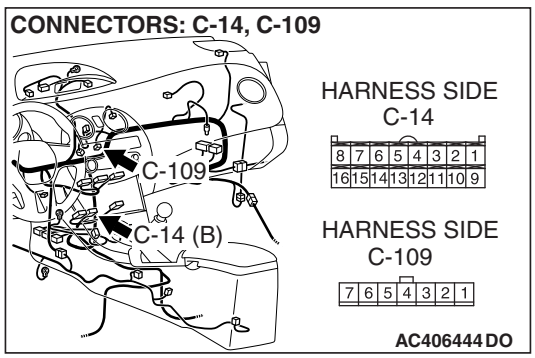

(2) Measure the resistance between A/C-ECU connector C-14 terminal 15 and air mixing damper control motor and potentiometer connector C-109 terminal 5.

**OK: Less than 2 ohms**

**Q: Is the check result normal?**

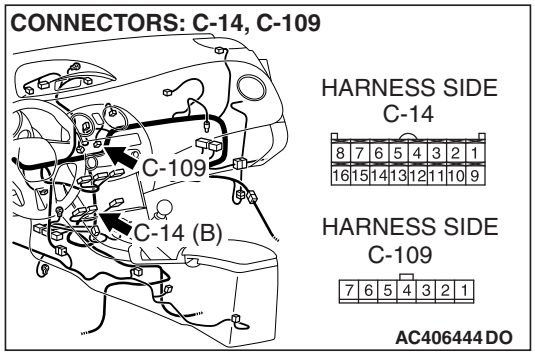
**YES :** Go to Step 8.
**NO :** Go to Step 7.

**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 15) and air mixing damper control motor and potentiometer connector C-109 (terminal 5).**



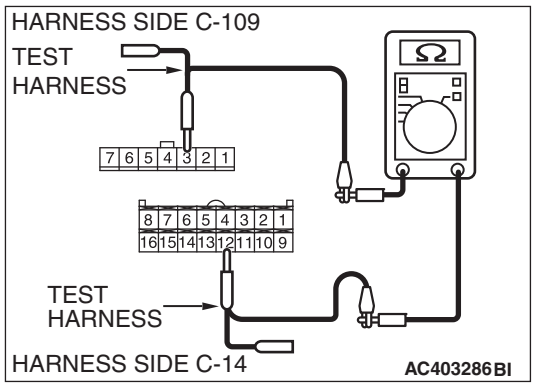

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 15) and air mixing damper control motor and potentiometer connector C-109 (terminal 5) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.




**STEP 8. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and air mixing damper control motor and potentiometer connector C-109, and measure the resistance at the wiring harness side.



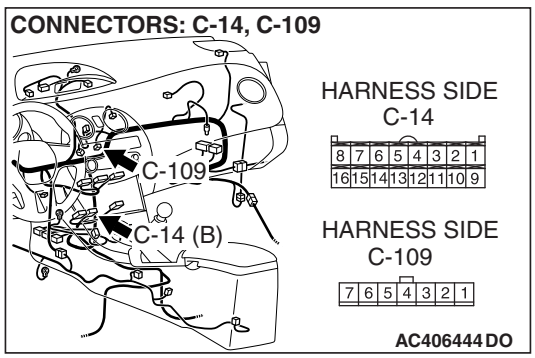

(2) Measure the resistance between A/C-ECU connector C-14 terminal 12 and air mixing damper control motor and potentiometer connector C-109 terminal 3.

**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 10.
**NO :** Go to Step 9.

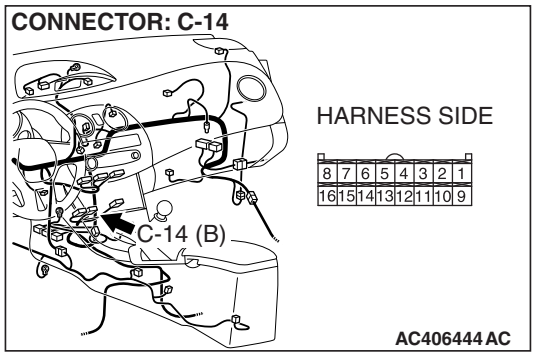
**STEP 9. Check the wiring harness between A/C-ECU connector C-14 (terminal 12) and air mixing damper control motor and potentiometer connector C-109 (terminal 3).**



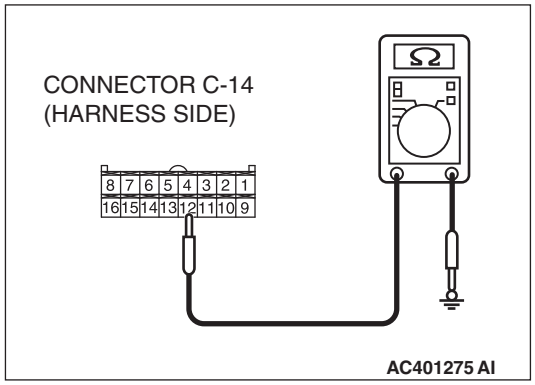

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 12) and air mixing damper control motor and potentiometer connector C-109 (terminal 3) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 10. Measure the resistance at A/C-ECU connector C-14.**




(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.



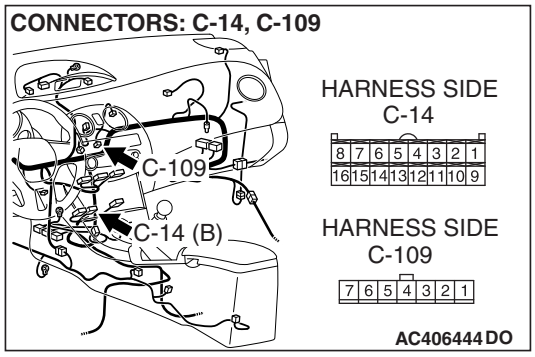

(2) Measure the resistance value between terminal 12 and ground.

**OK: 1kΩ or more**

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 12.
**NO :** Go to Step 11.

**STEP 11. Check the wiring harness between A/C-ECU connector C-14 (terminal 12) and air mixing damper control motor and potentiometer connector C-109 (terminal 3).**




**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 12) and air mixing damper control motor and potentiometer connector C-109 (terminal 3) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 12. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check that the diagnostic trouble code is not set.

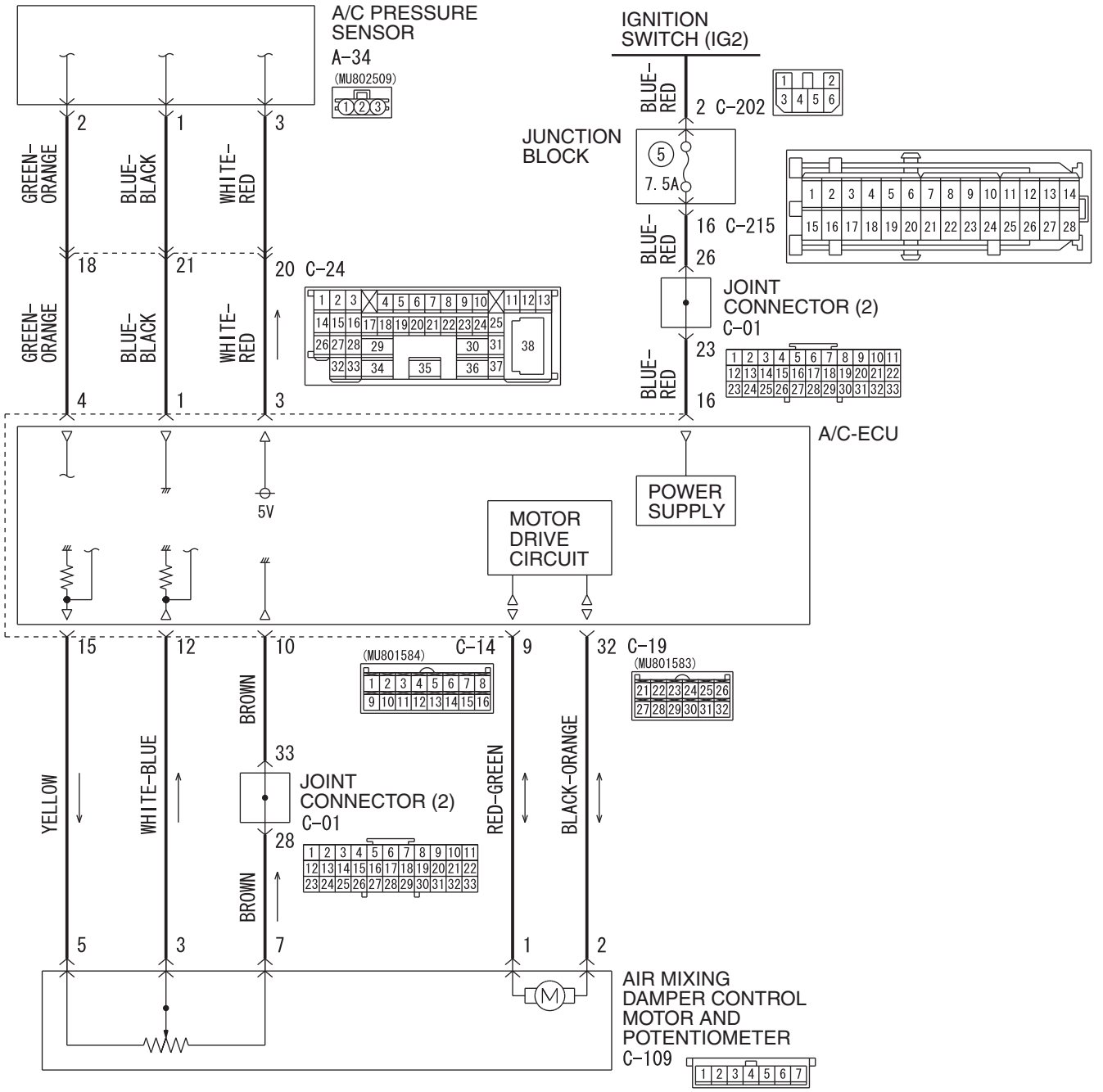
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

## DTC B1045: Air Mixing Damper Control Motor and Potentiometer (Activating system failure)

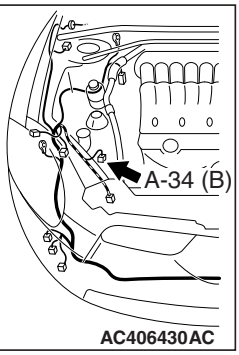
**A/C Pressure Sensor, Air Mixing Damper Control Motor and Potentiometer Circuit**




WAP55M001A

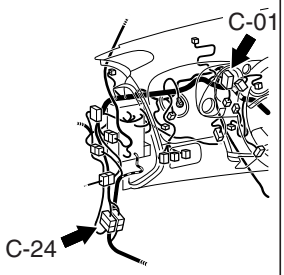
**TSB Revision**

CONNECTOR: A-34



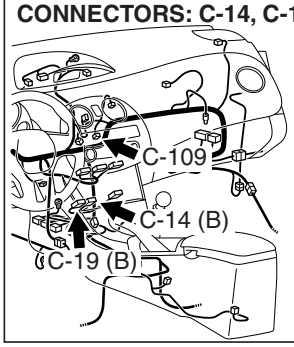

AC406430AC

CONNECTORS: C-01, C-24



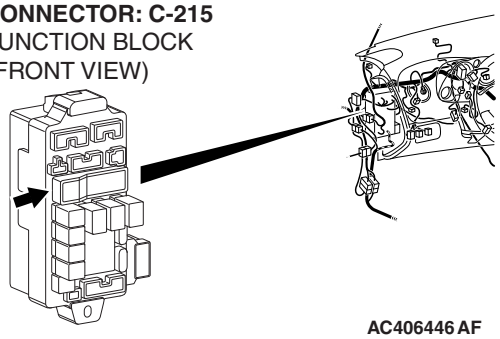

AC406442AS

CONNECTORS: C-14, C-19, C-109




AC406444BU

CONNECTOR: C-215
JUNCTION BLOCK
(FRONT VIEW)



AC406446AF

## FUNCTION

Takes in fresh air or inside air from the blower, and activates the damper on the side of the heater core to control the volume of the warm air that passes through the heater core and the cool air that does not pass through the heater core.

## DETECTION LOGIC

This code is set when the air mixing damper control motor and potentiometer cannot be rotated to the preset opening angle.

## PROBABLE CAUSES

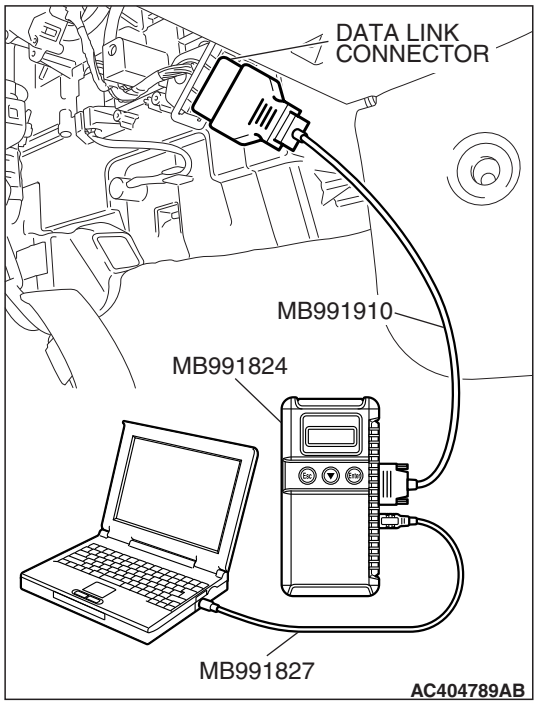
- Malfunction of connector.
- Malfunction of the harness (open circuit, damage or short to ground of air mixing damper control motor and potentiometer circuit, short to ground of pressure sensor circuit, and open circuit or damage of power supply (IG2) circuit)
- Malfunction of the air mixing damper control motor and potentiometer.
- Malfunction of the A/C-ECU.
- Malfunction of the junction block.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991658: Test Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**TSB Revision**




**STEP 1. Using scan tool MB991958, read the diagnostic trouble code.**

**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

Check if an A/C-ECU DTC is set.

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

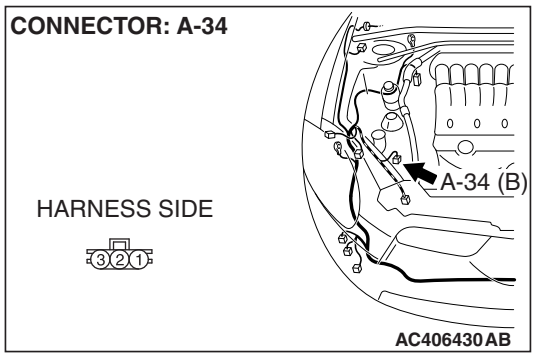
**Q: Is only diagnostic trouble code B1045 set?**

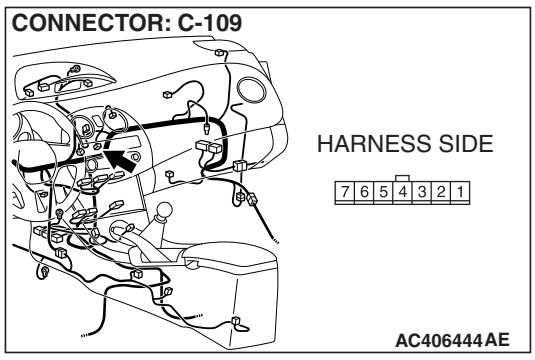
**YES <Only B1045 is set> :** Go to Step 11.
**NO <B1041 is set simultaneously> :** Refer to P.00-14.
**NO <B1042 is set simultaneously> :** Refer to P.00E-2.
**NO <B1065 is set simultaneously> :** Go to Step 2.

**STEP 2. Check air mixing damper control motor and potentiometer connector C-109 and A/C pressure sensor connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are air mixing damper control motor and potentiometer connector C-109 and A/C pressure sensor connector A-34 in good condition?**

**YES :** Go to Step 3.
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



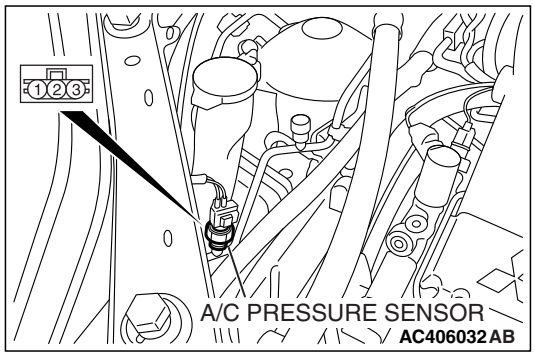



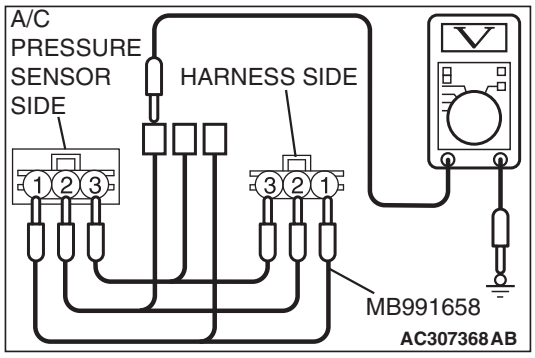
**STEP 3. Check the A/C pressure sensor operation.**

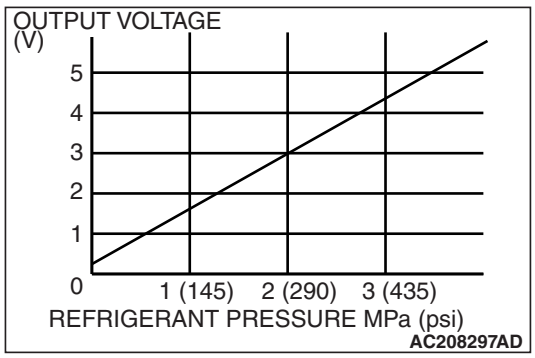
(1) Assemble a gauge manifold on the high pressure service valve.

(2) Disconnect the A/C pressure sensor connector and connect special tool test harness MB991658 as shown in the illustration.

(3) Turn ON the engine and then turn ON the A/C switch.



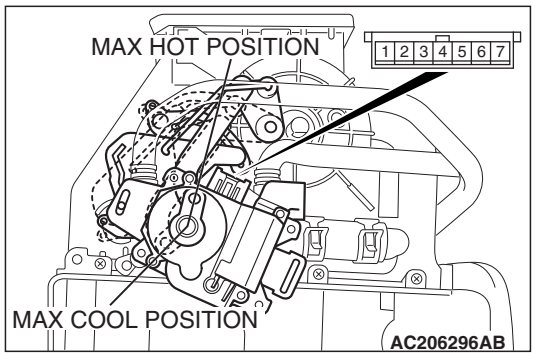

(4) At this time, check to see that the voltage of A/C pressure sensor terminal No. 2 reflects the specifications of the figure.

*NOTE: The allowance shall be defined as ±5%.*

**Q: Is the A/C pressure sensor operating properly?**

**YES :** Go to Step 4.

**NO :** Replace the A/C pressure sensor. Check that the A/C works normally.




**STEP 4. Check the air mixing damper control motor and potentiometer.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the MAX COOL or MAX HOT position.**

(1) Operate the air mixing damper control motor as described in the table below.

| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the MAX COOL position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the MAX COOL position to the MAX HOT position |
| At the MAX HOT position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the MAX HOT position to the MAX COOL position |

(2) Measure the resistances between connector terminals 3 and 5, and between 3 and 7, while the air mixing damper control motor is running. The resistances should change gradually within the standard value.

**Standard value: 1.7 (MAX HOT) – 5.0 (MAX COOL) kΩ**

**Q: Are the air mixing damper control motor and potentiometer in good condition?**

**YES :** Go to Step 5.

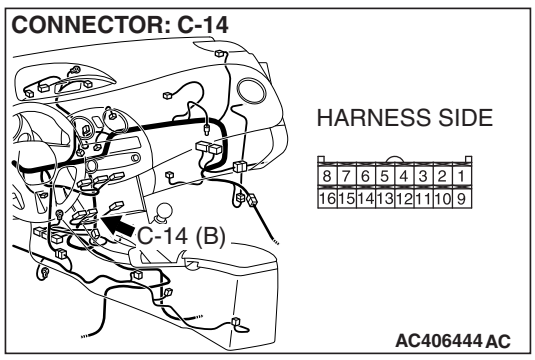
**NO :** Replace the air mixing damper control motor and potentiometer.

**STEP 5. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

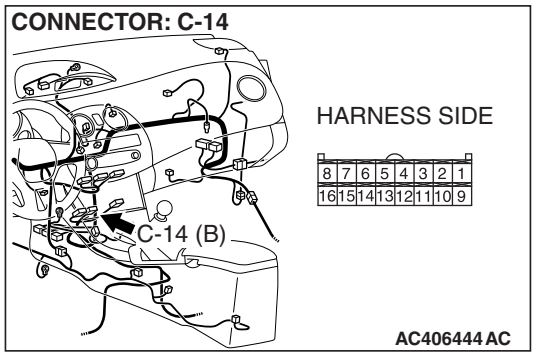
**Q: Is A/C-ECU connector C-14 in good condition?**

**YES :** Go to Step 6.

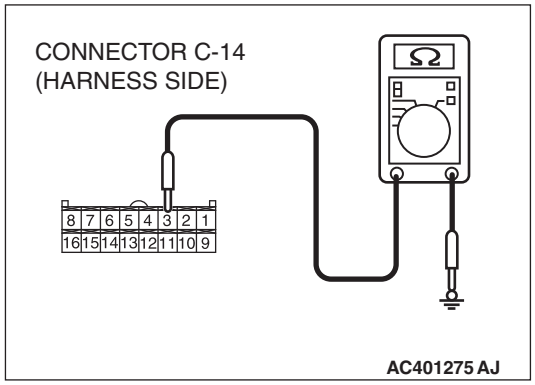
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.



**STEP 6. Measure the resistance at A/C-ECU connector C-14.**




(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.



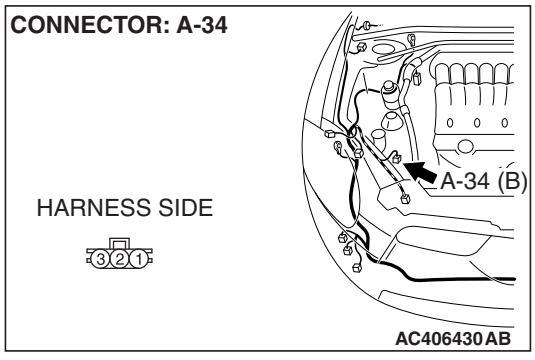

(2) Measure the resistance value between terminal 3 and ground.

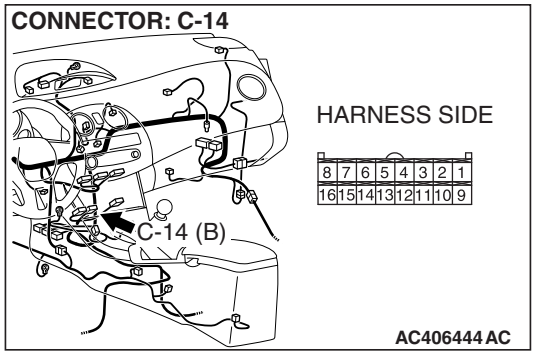
**OK: 1.5 kΩ or more**

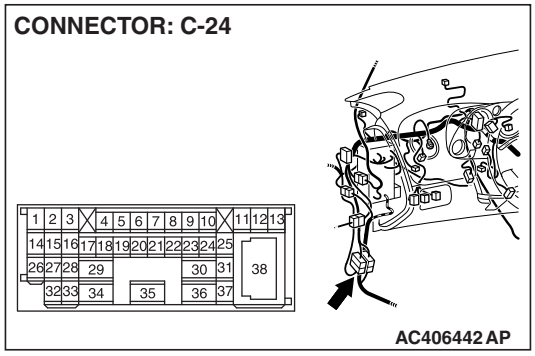
**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 8.
**NO :** Go to Step 7.

**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 3) and A/C pressure sensor connector A-34 (terminal 3).**






*NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

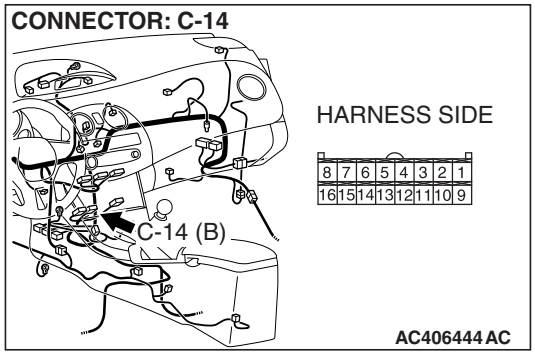
**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 3) and A/C pressure sensor connector A-34 (terminal 3) in good condition?**

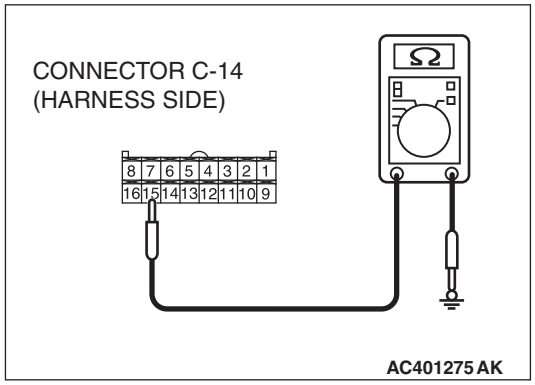
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 8. Measure the resistance at A/C-ECU connector C-14.**

(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.



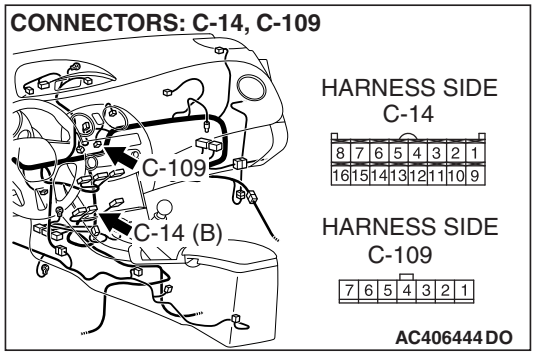

(2) Measure the resistance value between terminal 15 and ground.

**OK: 1 kΩ or more**

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 10.

**NO :** Go to Step 9.




**STEP 9. Check the wiring harness between A/C-ECU connector C-14 (terminal 15) and air mixing damper control motor and potentiometer connector C-109 (terminal 5).**

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 15) and air mixing damper control motor and potentiometer connector C-109 (terminal 5) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 10. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

**STEP 11. Using scan tool MB991958, check actuator test.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
Item 42: air mix damper motor 0% (MAX COOL position)
Item 43: air mix damper motor 100% (MAX HOT position)
Item 44: air mix damper motor 50% (middle position)
- Check that the air mixing damper control motor operates.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the motor operate normally?**

**YES :** Go to Step 13.

**NO :** Go to Step 12.

**STEP 12. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

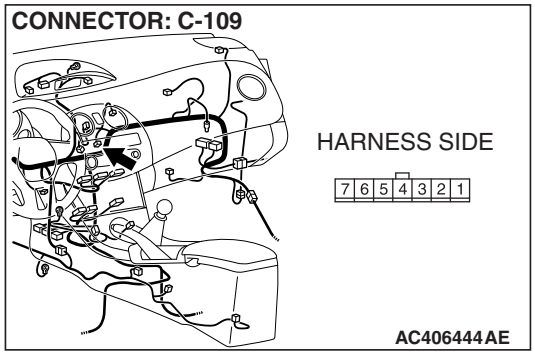
**NO :** Replace the heater control.

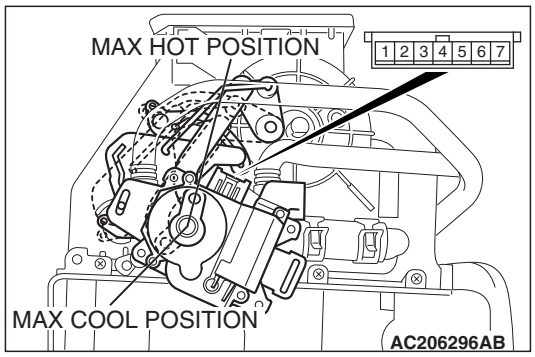
**STEP 13. Check air mixing damper control motor and potentiometer connector C-109 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is air mixing damper control motor and potentiometer connector C-109 in good condition?**

**YES :** Go to Step 14.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.






**STEP 14. Check the air mixing damper control motor and potentiometer.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the MAX COOL or MAX HOT position.**

(1) Operate the air mixing damper control motor as described in the table below.

| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the MAX COOL position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the MAX COOL position to the MAX HOT position |
| At the MAX HOT position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the MAX HOT position to the MAX COOL position |

(2) Measure the resistances between connector terminals 3 and 5, and between 3 and 7, while the air mixing damper control motor is running. The resistances should change gradually within the standard value.

**Standard value: 1.7 (MAX HOT) – 5.0 (MAX COOL) kΩ**

**Q: Are the air mixing damper control motor and potentiometer in good condition?**

**YES :** Go to Step 15.

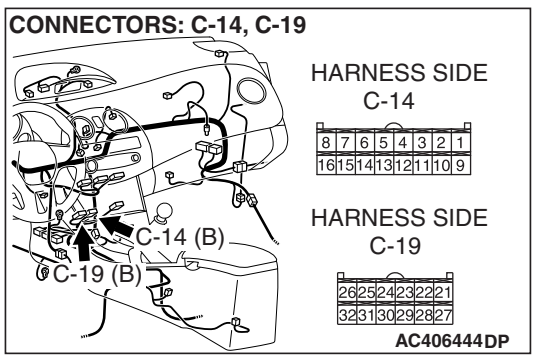
**NO :** Replace the air mixing damper control motor and potentiometer.

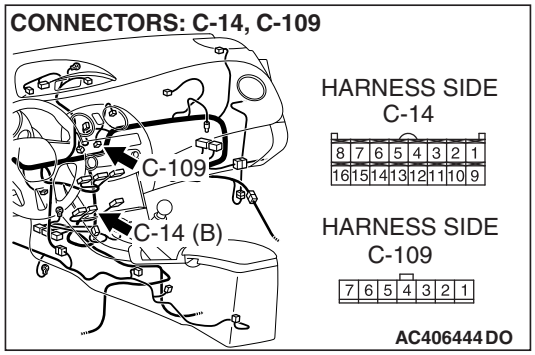
**STEP 15. Check A/C-ECU connector C-14 and C-19 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are A/C-ECU connectors C-14 and C-19 in good condition?**

**YES :** Go to Step 16.

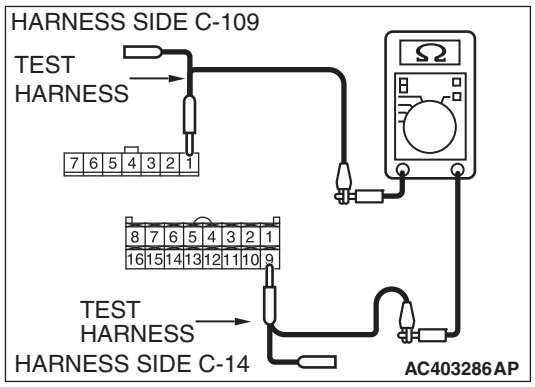
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.






**STEP 16. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and air mixing damper control motor and potentiometer connector C-109, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C-ECU connector C-14 terminal 9 and air mixing damper control motor and potentiometer connector C-109 terminal 1.

**OK: Less than 2 ohms**

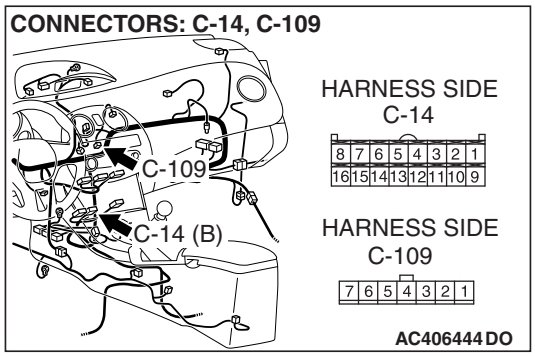
**Q: Does the measured resistance value correspond with this range?**

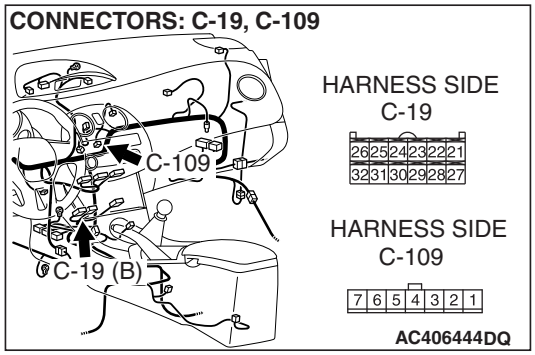
**YES :** Go to Step 18.
**NO :** Go to Step 17.

**STEP 17. Check the wiring harness between A/C-ECU connector C-14 (terminal 9) and air mixing damper control motor and potentiometer connector C-109 (terminal 1).**

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 9) and air mixing damper control motor and potentiometer connector C-109 (terminal 1) in good condition?**

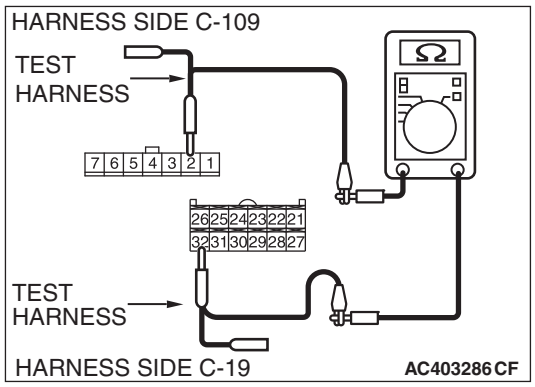
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.






**STEP 18. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-19 and air mixing damper control motor and potentiometer connector C-109, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C-ECU connector C-19 terminal 32 and air mixing damper control motor and potentiometer connector C-109 terminal 2.

**OK: Less than 2 ohms**

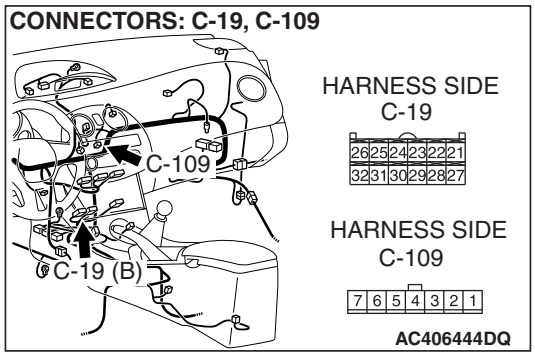
**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 20.
**NO :** Go to Step 19.

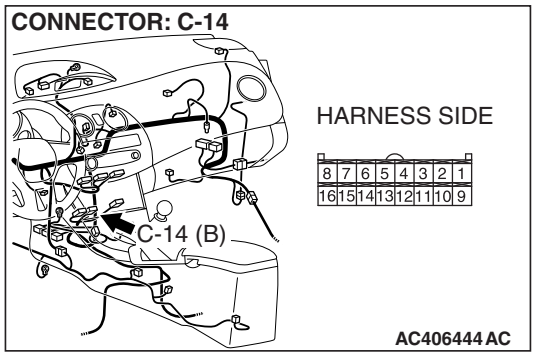
**STEP 19. Check the wiring harness between A/C-ECU connector C-19 (terminal 32) and air mixing damper control motor and potentiometer connector C-109 (terminal 2).**

**Q: Is the wiring harness between A/C-ECU connector C-19 (terminal 32) and air mixing damper control motor and potentiometer connector C-109 (terminal 2) in good condition?**

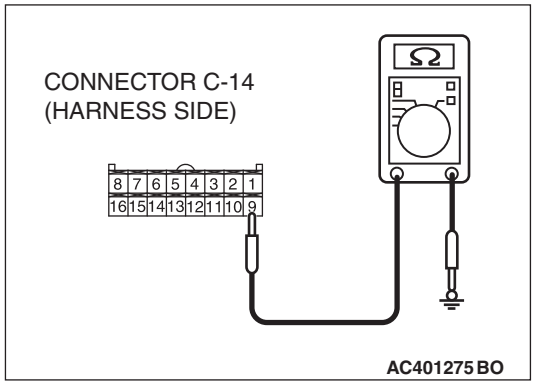
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.



**STEP 20. Measure the resistance at A/C-ECU connector C-14.**




(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.



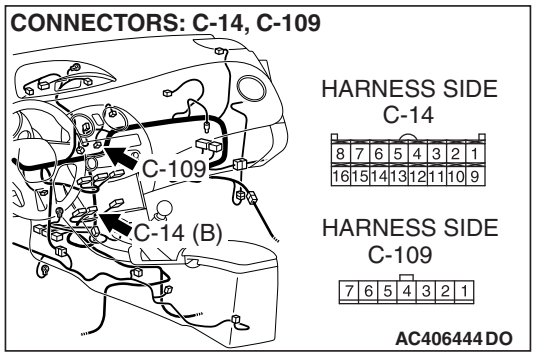

(2) Measure the resistance value between terminal 9 and ground.

**OK: 1 kΩ or more**

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 22.
**NO :** Go to Step 21.

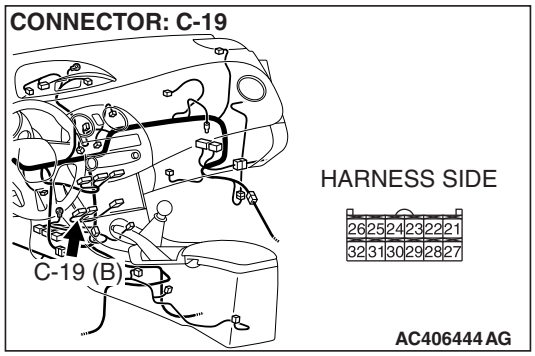
**STEP 21. Check the wiring harness between A/C-ECU connector C-14 (terminal 9) and air mixing damper control motor and potentiometer connector C-109 (terminal 1).**



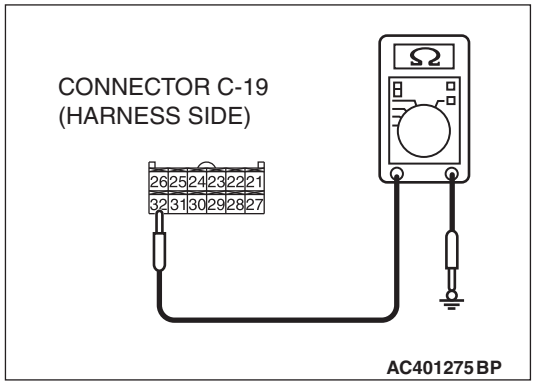

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 9) and air mixing damper control motor and potentiometer connector C-109 (terminal 1) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 22. Measure the resistance at A/C-ECU connector C-19.**




(1) Disconnect A/C-ECU connector C-19, and measure the resistance at the wiring harness side.



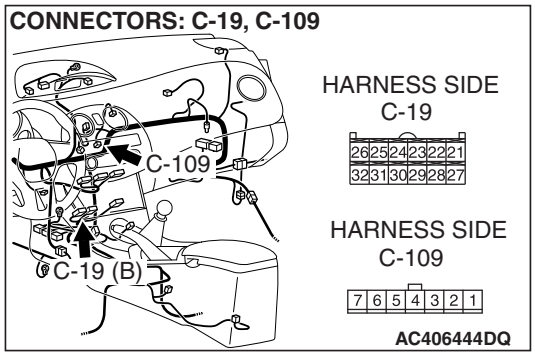

(2) Measure the resistance value between terminal 32 and ground.

**OK: 1 kΩ or more**

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 24.
**NO :** Go to Step 23.

**STEP 23. Check the wiring harness between A/C-ECU connector C-19 (terminal 32) and air mixing damper control motor and potentiometer connector C-109 (terminal 2).**




**Q: Is the wiring harness between A/C-ECU connector C-19 (terminal 32) and air mixing damper control motor and potentiometer connector C-109 (terminal 2) in good condition?**

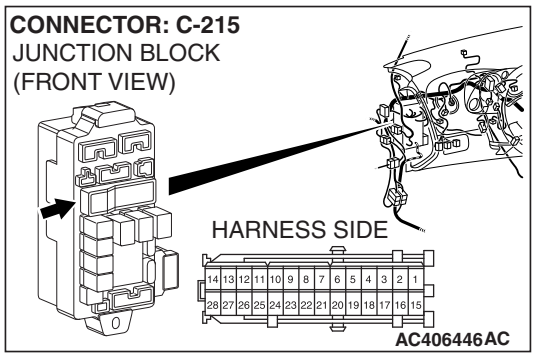
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 24. Check junction block connector C-215 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is junction block connectors C-215 in good condition?**

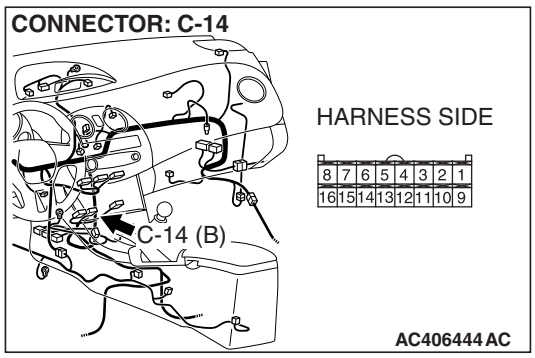
**YES :** Go to Step 25.

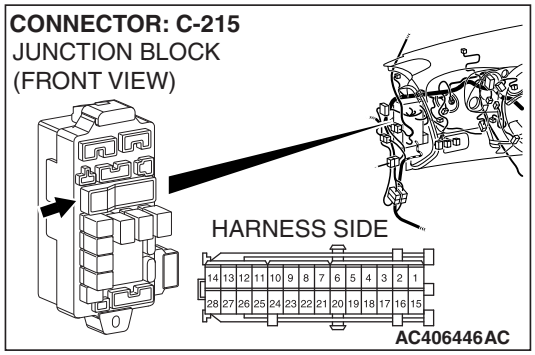
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

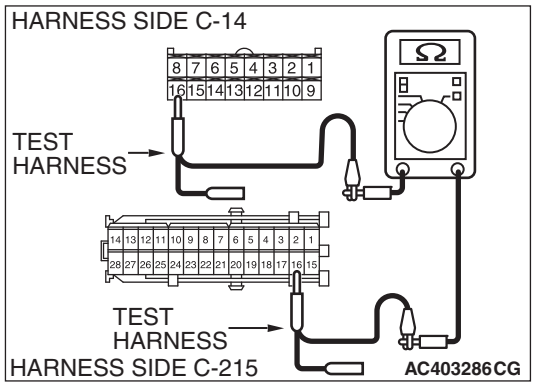



**STEP 25. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and junction block connector C-215, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C-ECU connector C-14 terminal 16 and junction block connector C-215 terminal 16.

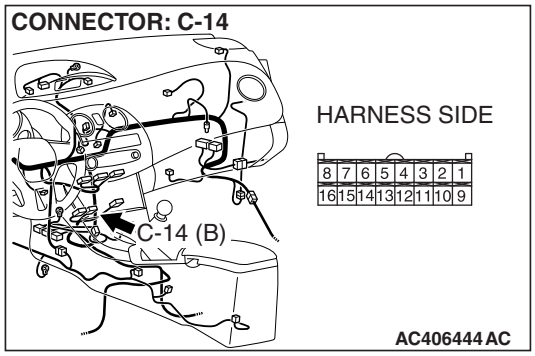
**OK: Less than 2 ohms**

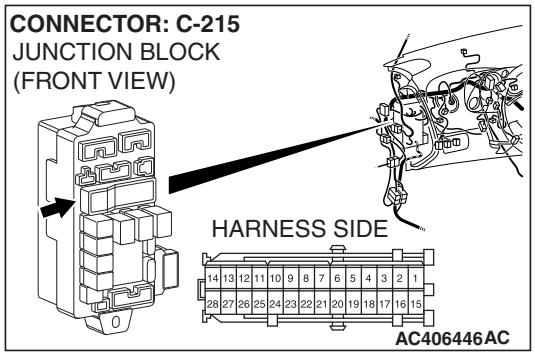
**Q: Does the measured resistance value correspond with this range?**

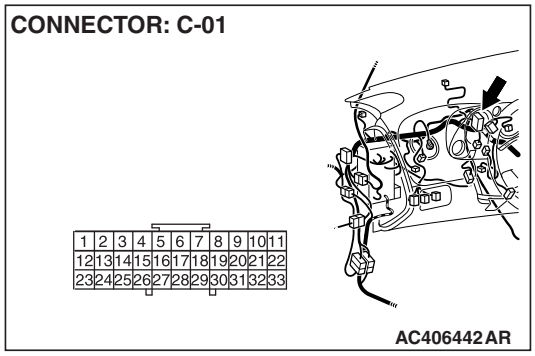
**YES :** Go to Step 27.

**NO :** Go to Step 26.

**STEP 26. Check the wiring harness between A/C-ECU connector C-14 (terminal 16) and junction block connector C-215 (terminal 16).**




*NOTE: Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 16) and junction block connector C-215 (terminal 16) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 27. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

**Q: Is the check result satisfactory?**

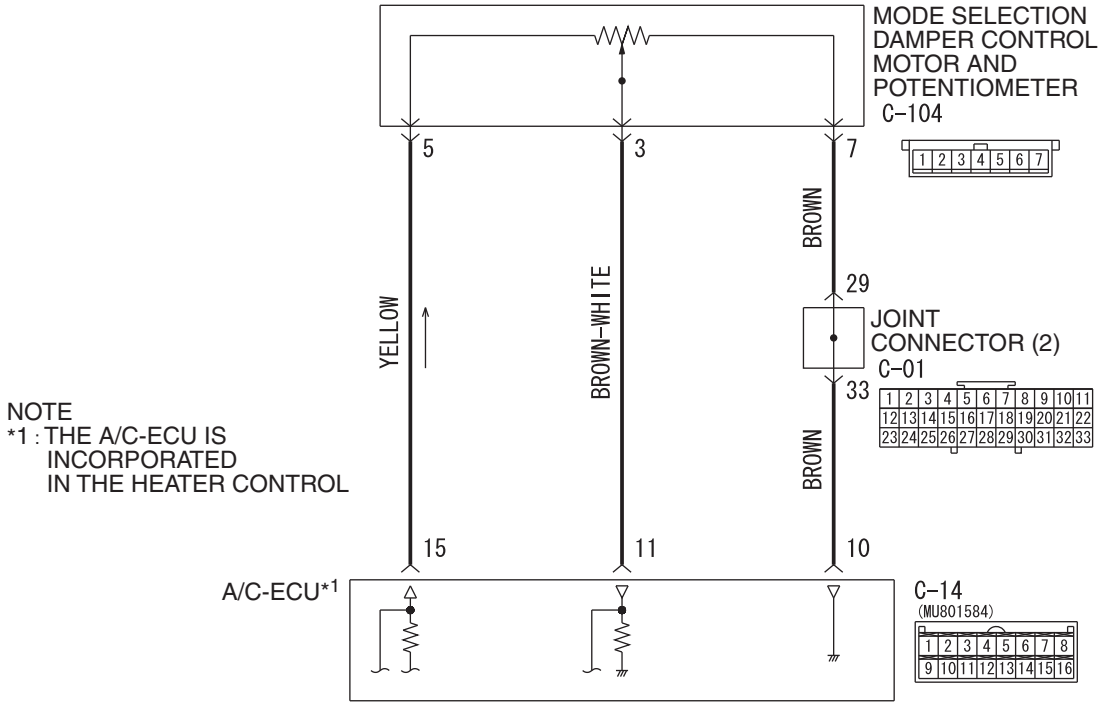
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

**TSB Revision**

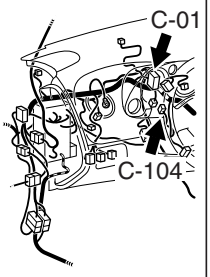
## DTC B1061: Mode Selection Damper Control Motor and Potentiometer (Potentiometer System Shorted to its Power Supply)

**Mode Selection Damper Control Motor Potentiometer Circuit**



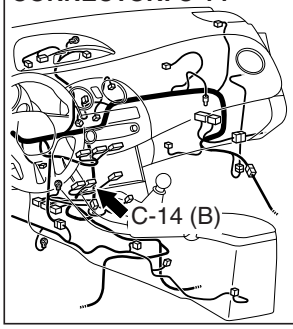

W6P55M008A

**CONNECTORS: C-01, C-104**




AC406442AO

**CONNECTOR: C-14**




AC406444AD

## FUNCTION

Read the position of mode selection damper from the motor driving.

## DETECTION LOGIC

This code is set when the mode selection damper control motor and potentiometer do not send any signal due to a short to power supply of the mode selection damper control motor and potentiometer circuit.

## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness (mode selection damper control motor and potentiometer circuit is open.)
- Malfunction of the mode selection damper control motor and potentiometer.
- Malfunction of the A/C-ECU.

**TSB Revision**

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**STEP 1. Using scan tool MB991958, check data list.**

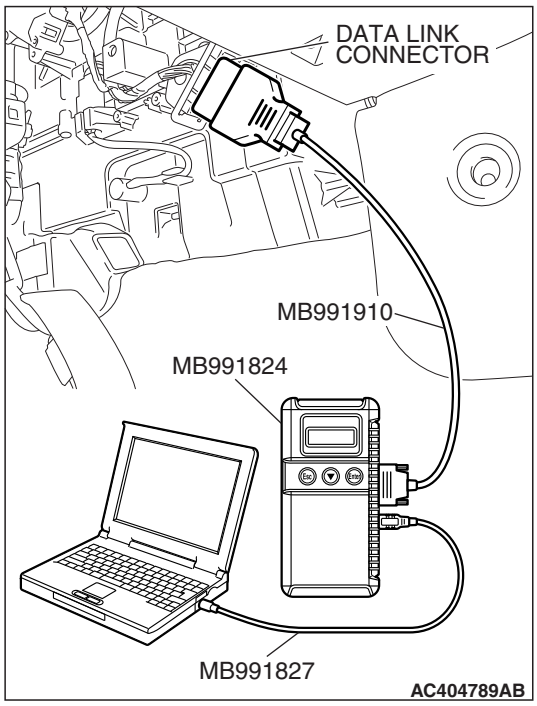
**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
  - Item 55: Air outlet c/o potentiometer
  - Item 56: Air outlet c/o potentiometer (Target)

*NOTE: Check that the set position of the heater control matches the displayed position on the scan tool.*

(4) Turn the ignition switch to the "LOCK" (OFF) position.




**Q: Is the check result satisfactory?**

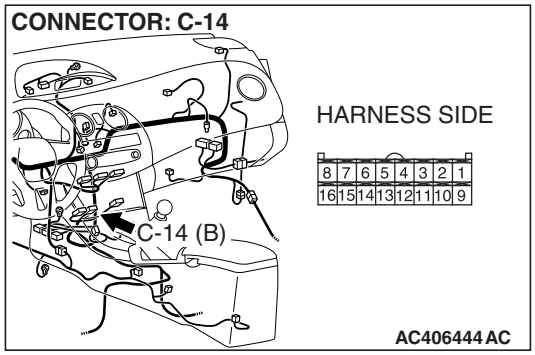
**YES :** Go to Step 2.
**NO :** Go to Step 3.

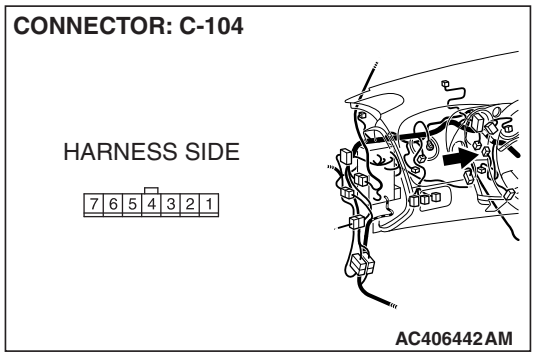
**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the heater control.




**STEP 3. Check A/C-ECU connector C-14 and mode selection damper control motor and potentiometer connector C-104 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

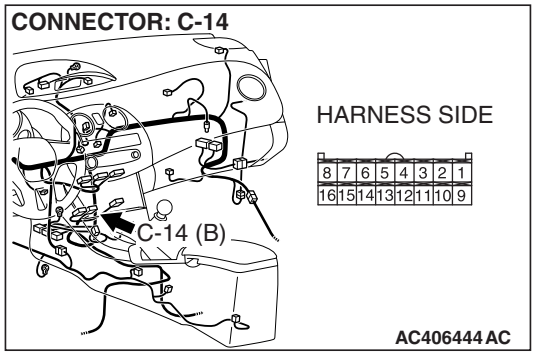
**Q: Are A/C-ECU connector C-14 and mode selection damper control motor and potentiometer connector C-104 in good condition?**

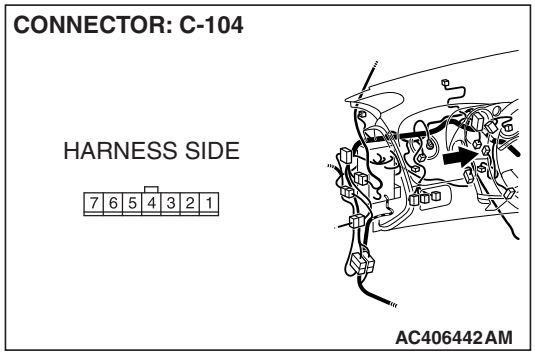
**YES :** Go to Step 4.

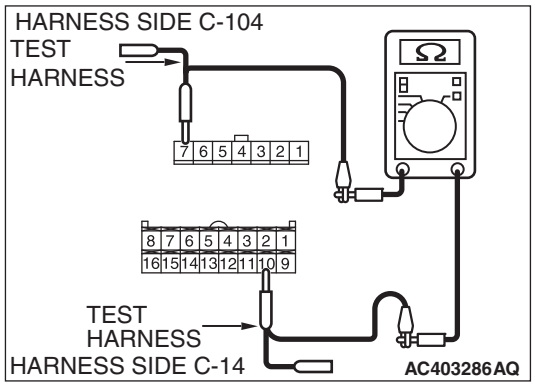
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

**STEP 4. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and mode selection damper control motor and potentiometer connector C-104, and measure the resistance at the wiring harness side.



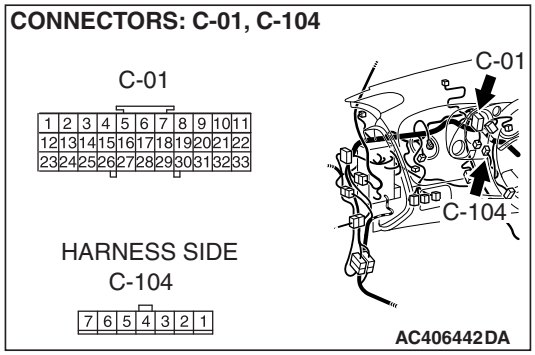

(2) Measure the resistance between A/C-ECU connector C-14 terminal 10 and mode selection damper control motor and potentiometer connector C-104 terminal 7.

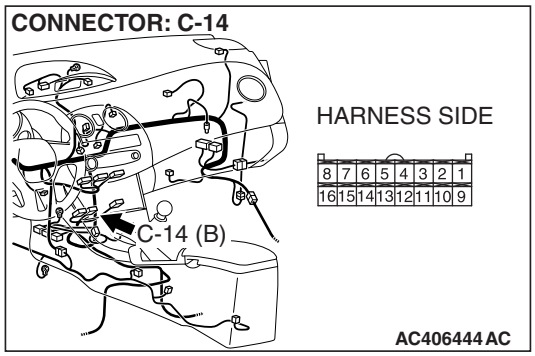
**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 6.
**NO :** Go to Step 5.

**STEP 5. Check the wiring harness between A/C-ECU connector C-14 (terminal 10) and mode selection damper control motor and potentiometer connector C-104 (terminal 7).**



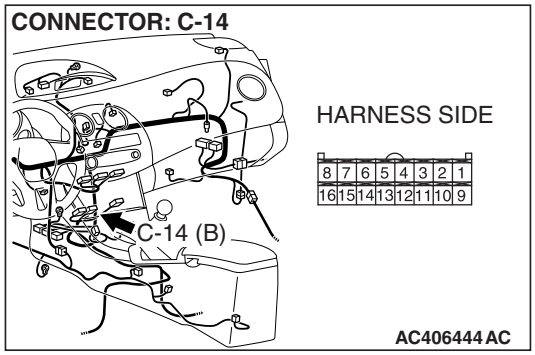




*NOTE: Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 10) and mode selection damper control motor and potentiometer connector C-104 (terminal 7) in good condition?**

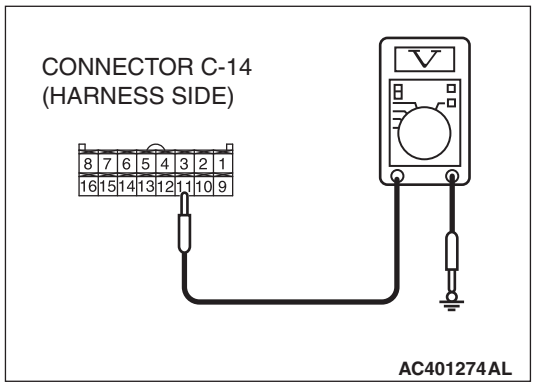
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.




**STEP 6. Measure the voltage at A/C-ECU connector C-14.**

(1) Disconnect A/C-ECU connector C-14, and measure the voltage at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.
(3) Move the mode selection damper control motor to the DEF position.



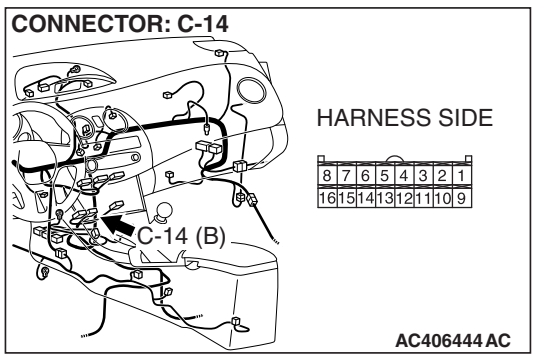

(4) Measure the voltage between terminal 11 and ground.

**OK: 0.4 – 0.8 volt**

**Q: Is the check result satisfactory?**

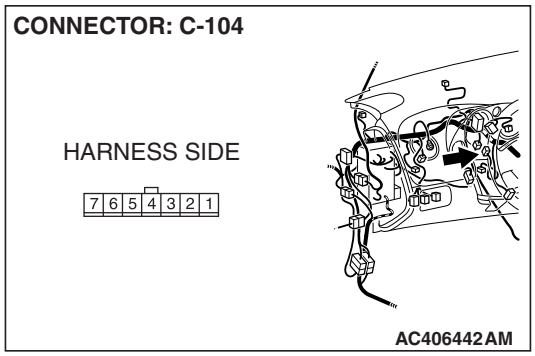
**YES :** Go to Step 8.
**NO :** Go to Step 7.

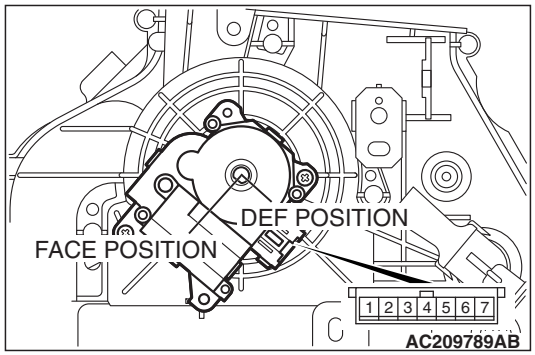
**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 11) and mode selection damper control motor and potentiometer connector C-104 (terminal 3).**




**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 11) and mode selection damper control motor and potentiometer connector C-104 (terminal 3) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.






**STEP 8. Check the mode selection damper control motor.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the FACE or DEF position.**

Check the mode selection damper control motor by the following procedures.

| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the FACE position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the FACE position to the DEF position |
| At the DEF position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the DEF position to the FACE position |

**Q: Is the mode selection damper control motor in good condition?**

**YES :** Go to Step 9.

**NO :** Replace the mode selection damper control motor and potentiometer.

**STEP 9. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

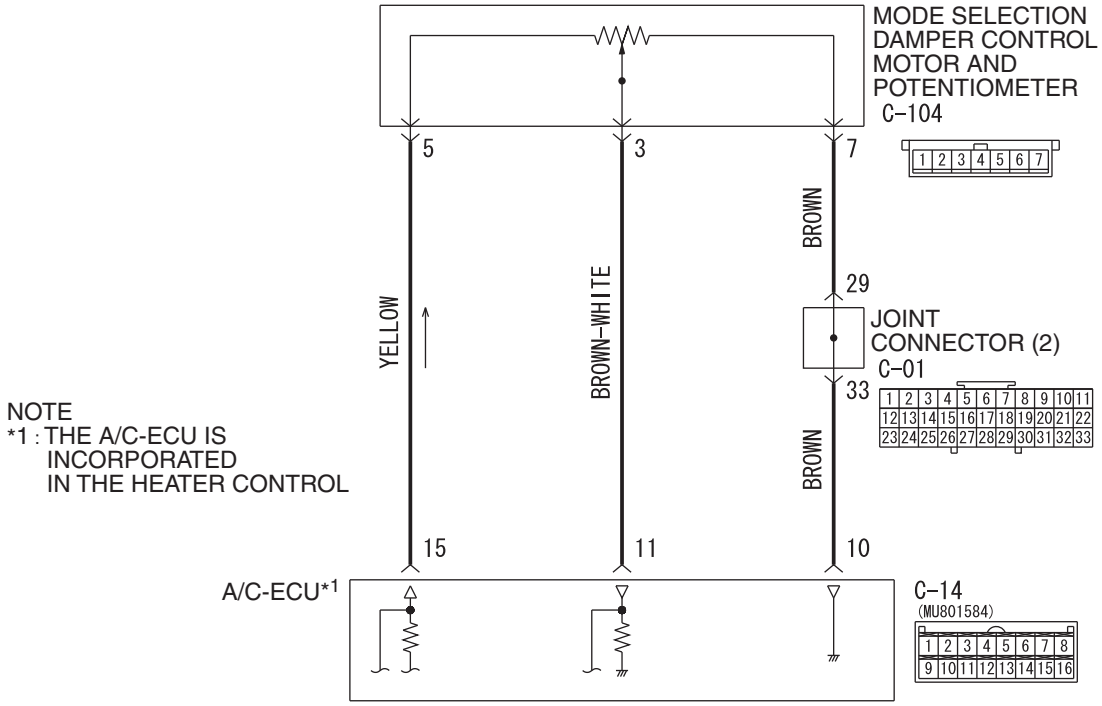
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

## DTC B1062: Mode Selection Damper Control Motor and Potentiometer (Potentiometer system shorted to its ground)

**Mode Selection Damper Control Motor Potentiometer Circuit**

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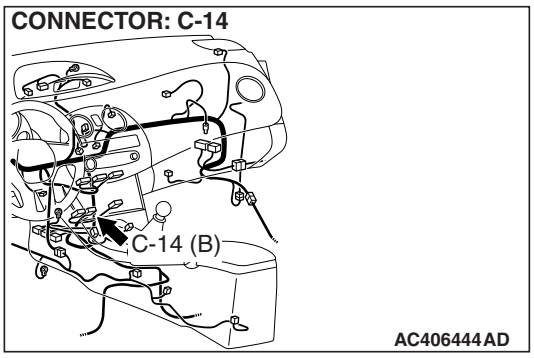
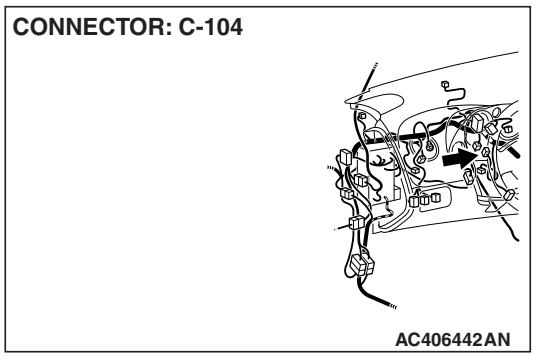



## FUNCTION

Read the position of mode selection damper from the motor driving.

## DETECTION LOGIC

This code is set when the mode selection damper control motor and potentiometer do not send any signal to the A/C-ECU due to an open circuit and short to ground of the mode selection damper control motor and potentiometer circuit.

## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness (mode selection damper control motor and potentiometer circuit is open/damaged/shorted to ground)
- Malfunction of the mode selection damper control motor and potentiometer.
- Malfunction of the A/C-ECU.

**TSB Revision**

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**STEP 1. Using scan tool MB991958, check data list.**

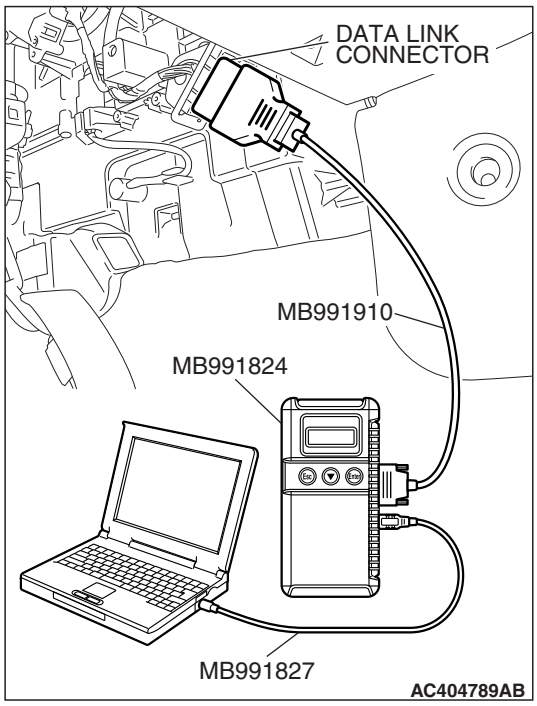
**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
  - Item 55: Air outlet c/o potentiometer
  - Item 56: Air outlet c/o potentiometer (Target)

*NOTE: Check that the set position of the heater control matches the displayed position on the scan tool.*

(4) Turn the ignition switch to the "LOCK" (OFF) position.




**Q: Is the sensor within the specified range?**

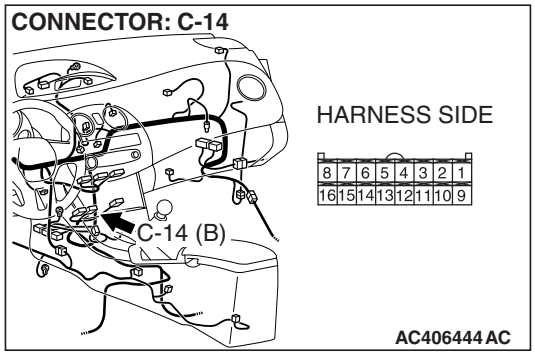
**YES :** Go to Step 2.
**NO :** Go to Step 3.

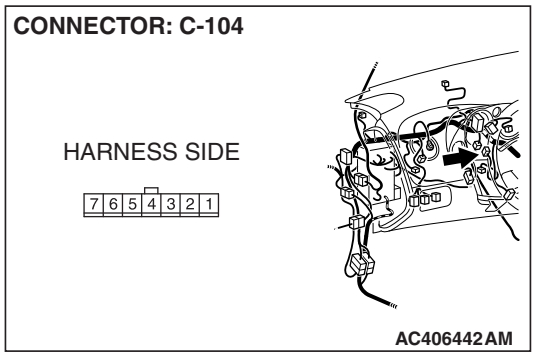
**STEP 2. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.
(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the heater control.




**STEP 3. Check A/C-ECU connector C-14 and mode selection damper control motor and potentiometer connector C-104 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

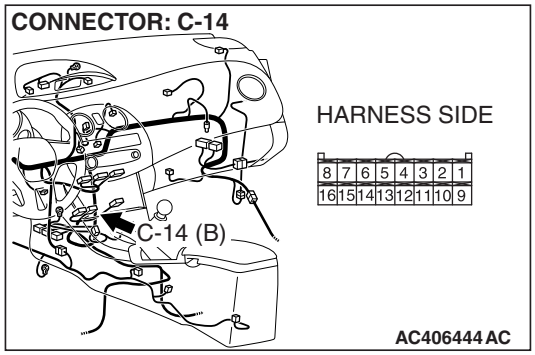
**Q: Are A/C-ECU connector C-14 and mode selection damper control motor and potentiometer connector C-104 in good condition?**

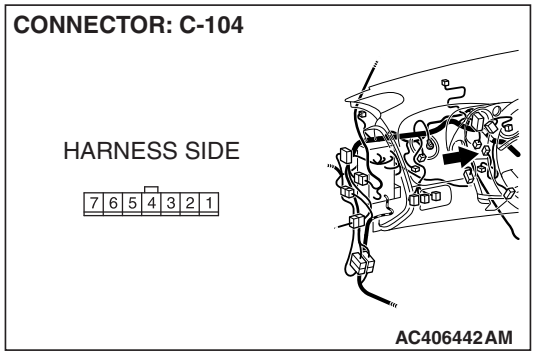
**YES :** Go to Step 4.

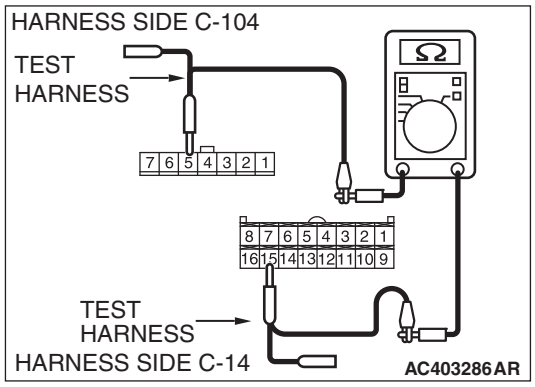
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

**STEP 4. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and mode selection damper control motor and potentiometer connector C-104, and measure the resistance at the wiring harness side.



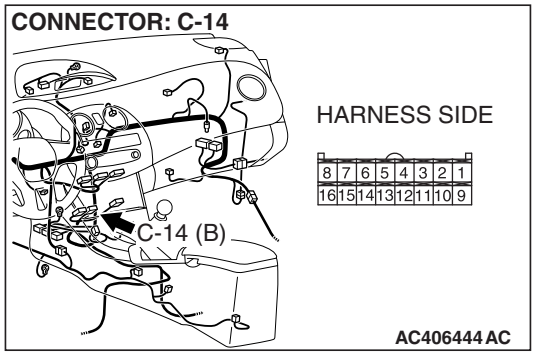



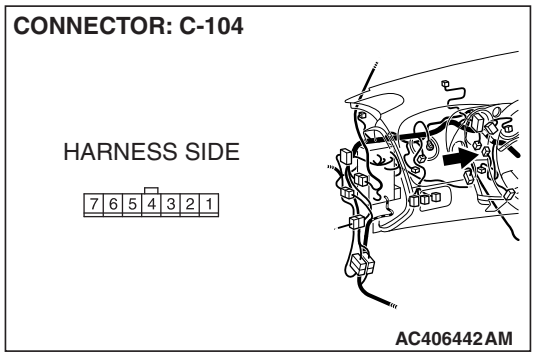

(2) Measure the resistance between A/C-ECU connector C-14 terminal 15 and mode selection damper control motor and potentiometer connector C-104 terminal 5.

**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 6.
**NO :** Go to Step 5.




**STEP 5. Check the wiring harness between A/C-ECU connector C-14 (terminal 15) and mode selection damper control motor and potentiometer connector C-104 (terminal 5).**

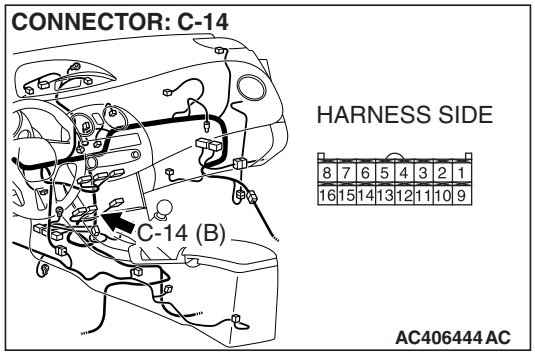
**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 15) and mode selection damper control motor and potentiometer connector C-104 (terminal 5) in good condition?**

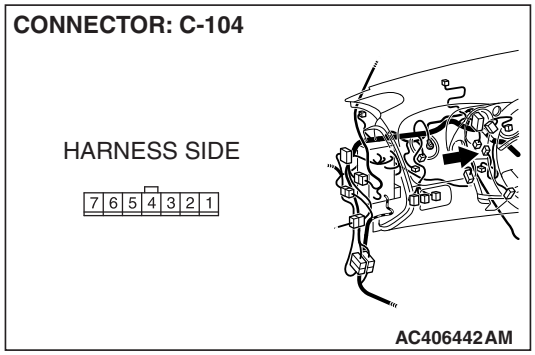
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

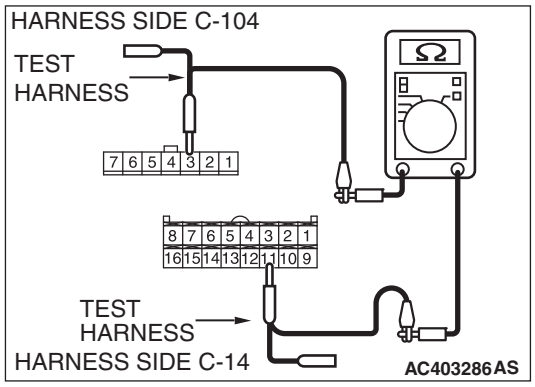
**NO :** Repair the wiring harness.

**STEP 6. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and mode selection damper control motor and potentiometer connector C-104, and measure the resistance at the wiring harness side.



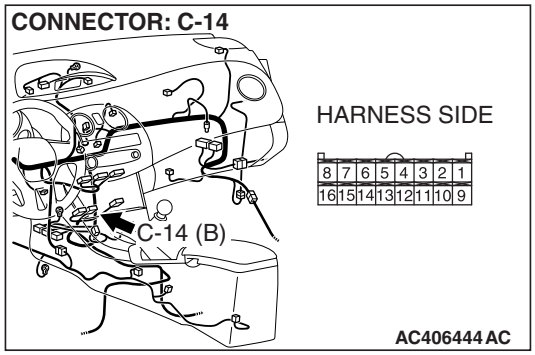




(2) Measure the resistance between A/C-ECU connector C-14 terminal 11 and mode selection damper control motor and potentiometer connector C-104 terminal 3.

**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 8.
**NO :** Go to Step 7.

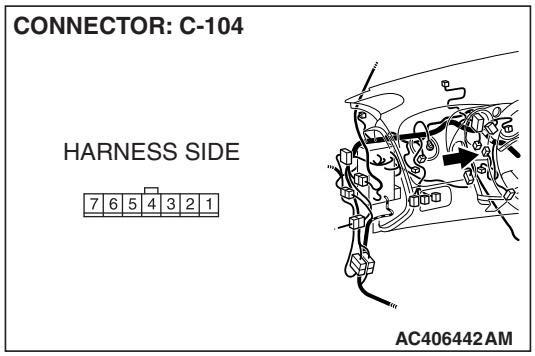



**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 11) and mode selection damper control motor and potentiometer connector C-104 (terminal 3).**

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 11) and mode selection damper control motor and potentiometer connector C-104 (terminal 3) in good condition?**

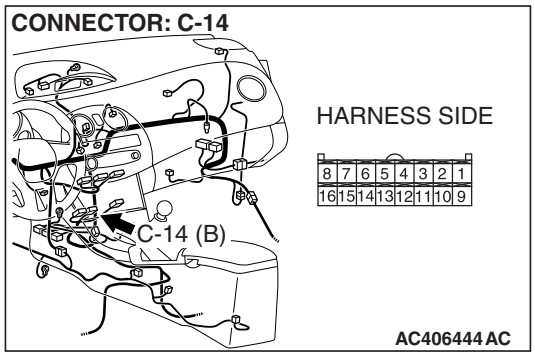
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

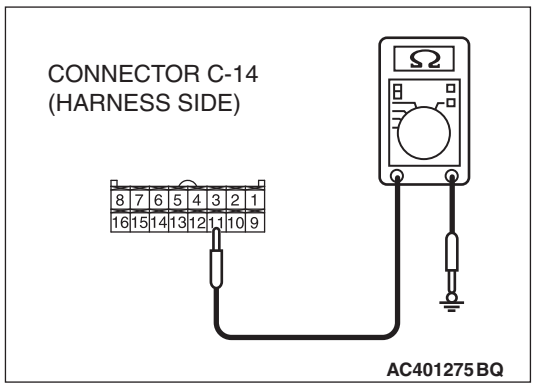
**NO :** Repair the wiring harness.




**STEP 8. Measure the resistance at A/C-ECU connector C-14.**

(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.
(3) Move the mode selection damper control motor to the DEF position.



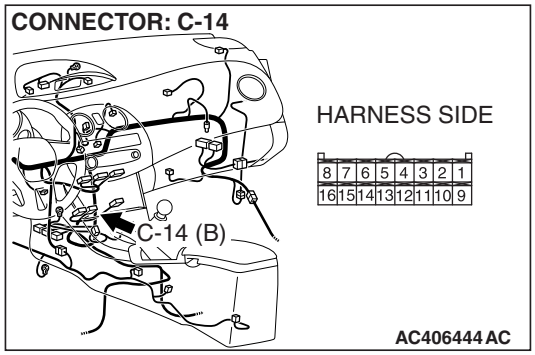

(4) Measure the resistance between terminal 11 and ground.

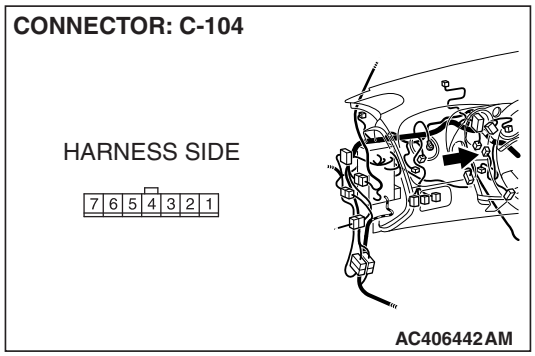
**OK: 1 kΩ or more**

**Q: Is the check result satisfactory?**

**YES :** Go to Step 10.

**NO :** Go to Step 9.



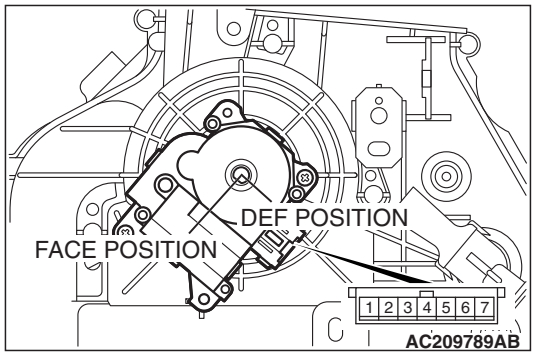




**STEP 9. Check the wiring harness between A/C-ECU connector C-14 (terminal 11) and mode selection damper control motor and potentiometer connector C-104 (terminal 3).**

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 11) and mode selection damper control motor and potentiometer connector C-104 (terminal 3) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.




**STEP 10. Check the mode selection damper control motor.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the FACE or DEF position.**

Check the mode selection damper control motor by the following procedures.

| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the FACE position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the FACE position to the DEF position |
| At the DEF position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the DEF position to the FACE position |

**Q: Is the mode selection damper control motor in good condition?**

**YES :** Go to Step 11.

**NO :** Replace the mode selection damper control motor and potentiometer.

**STEP 11. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

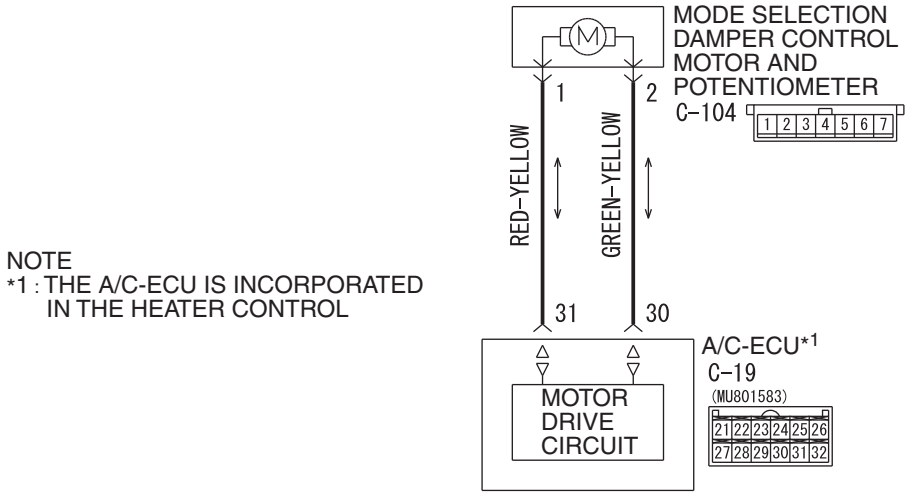
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

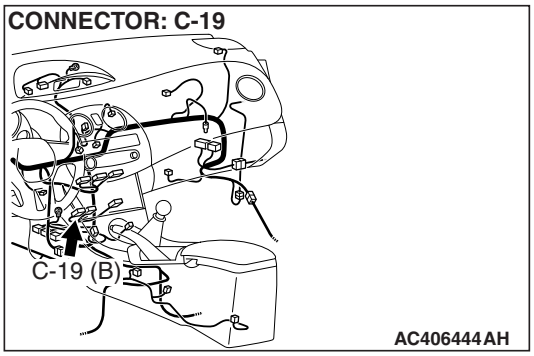
**NO :** Replace the heater control.

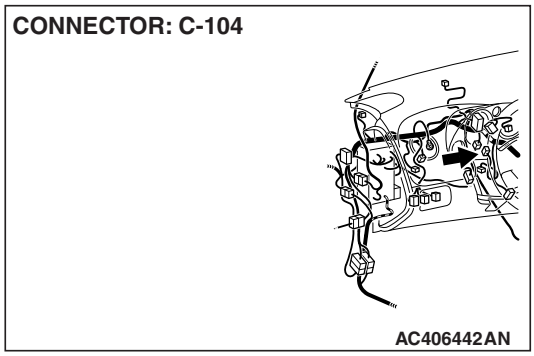
## DTC B1065: Mode Selection Damper Control Motor and Potentiometer (Activating System Failure)

**Mode Selection Damper Control Motor Circuit**




W6P55M010A




## FUNCTION

Drive the mode selection damper control motor and control the outlet selection.

## DETECTION LOGIC

This code is set when the mode selection damper cannot be rotated to the preset opening angle.

## PROBABLE CAUSES

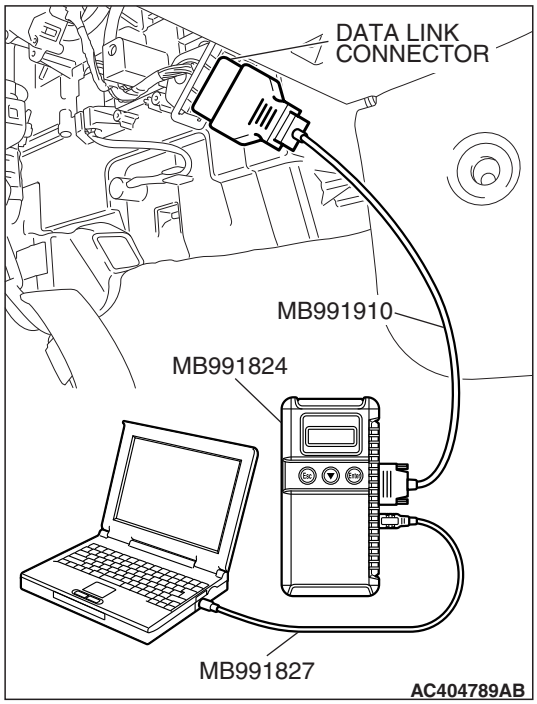
- Malfunction of connector.
- Malfunction of the harness (mode selection damper control motor and potentiometer circuit is open, shorted to ground, or the resistance has increased)
- Malfunction of the mode selection damper control motor and potentiometer.
- Malfunction of the A/C-ECU.
- Malfunction of the A/C pressure sensor.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**TSB Revision**




**STEP 1. Using scan tool MB991958, read the diagnostic trouble code.**

**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

Check if an A/C-ECU DTC is set.

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is diagnostic trouble code B1045 set?**

**YES :** Refer to P.00-14.
**NO :** Go to Step 2.

**STEP 2. Using scan tool MB991958, check actuator test.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
- Item 67: air outlet c/o damper (Bi_Level position)
- Item 68: air mix damper motor (DEF position)
- Item 69: air mix damper motor (DEF/FOOT position)
- Item 70: air mix damper motor (FACE position)
- Item 71: air mix damper motor (FOOT position)
  - Check that the mode selection damper control motor operates.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the motor operate normally?**

**YES :** Go to Step 3.
**NO :** Go to Step 4.

**STEP 3. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

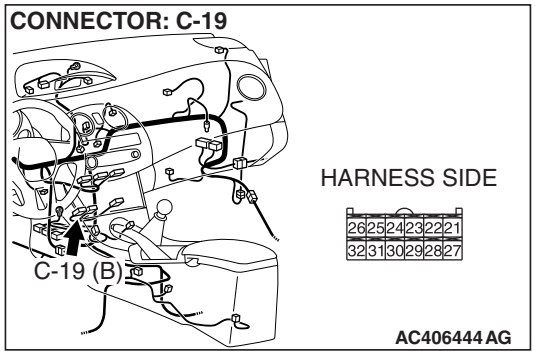
**NO :** Replace the heater control.

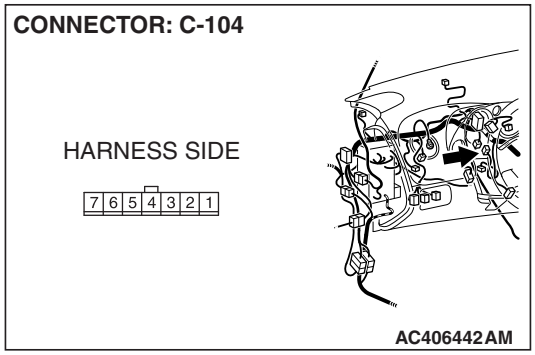
**STEP 4. Check A/C-ECU connector C-19 and mode selection damper control motor and potentiometer connector C-104 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are A/C-ECU connector C-19 and mode selection damper control motor and potentiometer connector C-104 in good condition?**

**YES :** Go to Step 5.

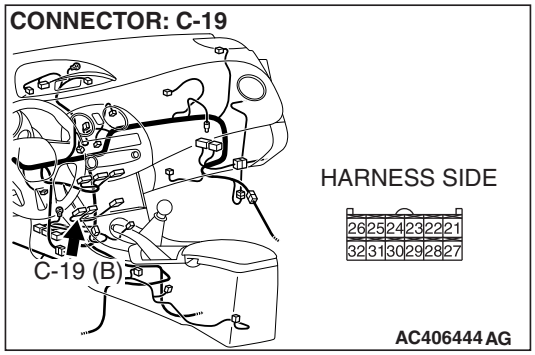
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

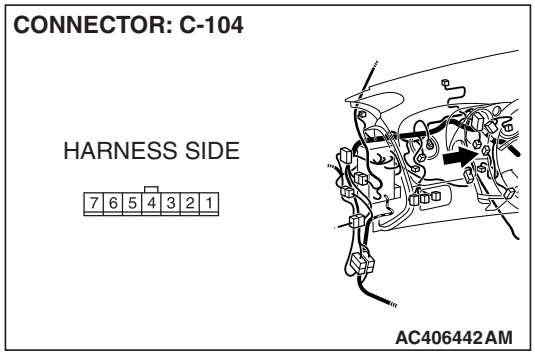


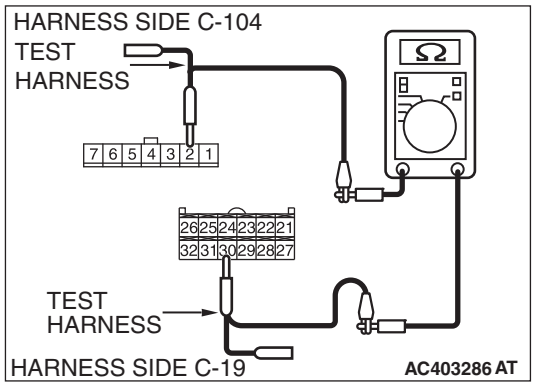



**STEP 5. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-19 and mode selection damper control motor and potentiometer connector C-104, and measure the resistance at the wiring harness side.



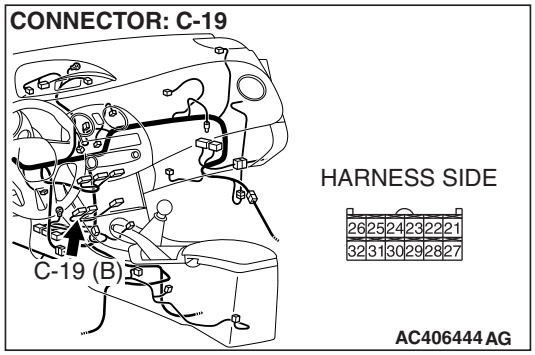



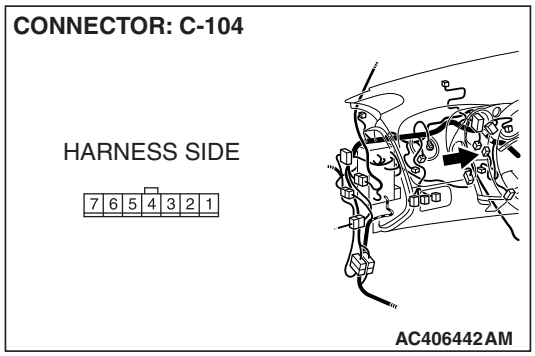

(2) Measure the resistance between A/C-ECU connector C-19 terminal 30 and mode selection damper control motor and potentiometer connector C-104 terminal 2.

**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 7.
**NO :** Go to Step 6.




**STEP 6. Check the wiring harness between A/C-ECU connector C-19 (terminal 30) and mode selection damper control motor and potentiometer connector C-104 (terminal 2).**

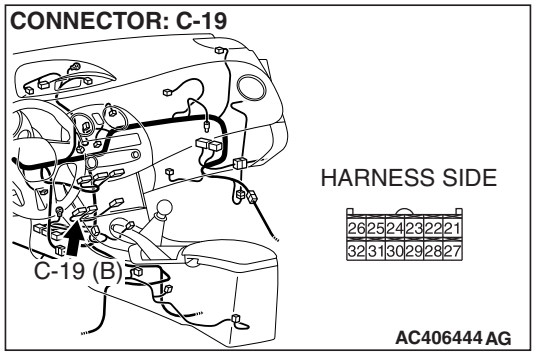
**Q: Is the wiring harnesses between A/C-ECU connector C-19 (terminal 30) and mode selection damper control motor and potentiometer connector C-104 (terminal 2) in good condition?**

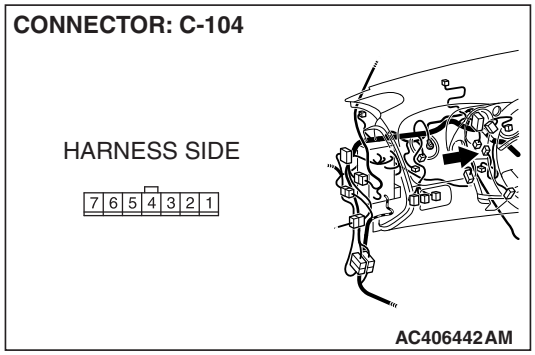
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

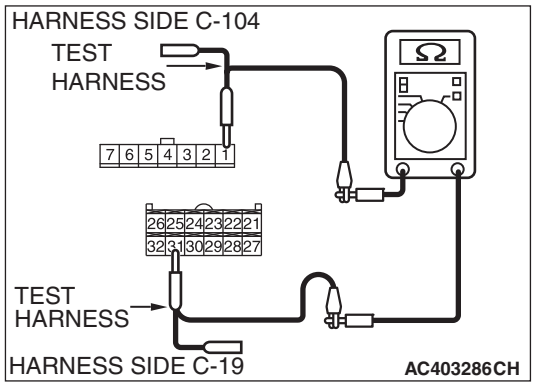
**NO :** Repair the wiring harness.

**STEP 7. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-19 and mode selection damper control motor and potentiometer connector C-104, and measure the resistance at the wiring harness side.



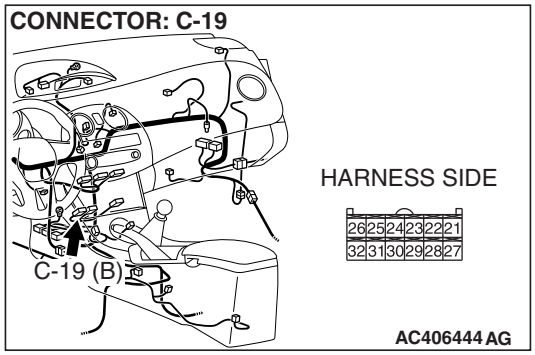

(2) Measure the resistance between A/C-ECU connector C-19 terminal 31 and mode selection damper control motor and potentiometer connector C-104 terminal 1.

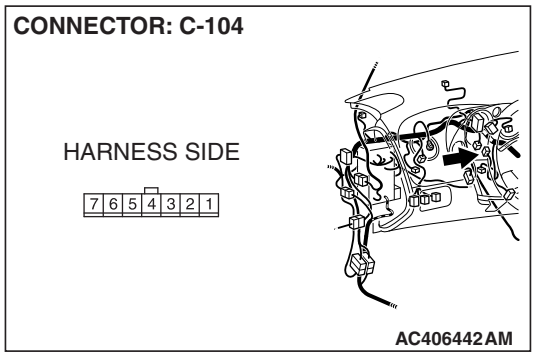
**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 9.
**NO :** Go to Step 8.

**STEP 8. Check the wiring harness between A/C-ECU connector C-19 (terminal 31) and mode selection damper control motor and potentiometer connector C-104 (terminal 1).**



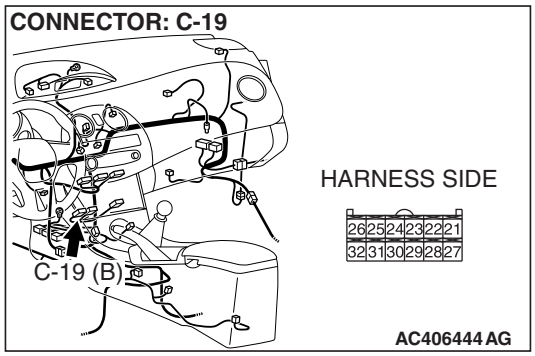

**Q: Is the wiring harnesses between A/C-ECU connector C-19 (terminal 31) and mode selection damper control motor and potentiometer connector C-104 (terminal 1) in good condition?**

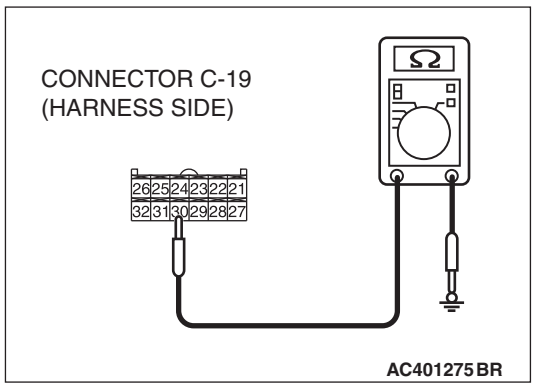
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 9. Measure the resistance at A/C-ECU connector C-19.**

(1) Disconnect A/C-ECU connector C-19, and measure the resistance at the wiring harness side.




(2) Measure the resistance value between terminal 30 and ground.

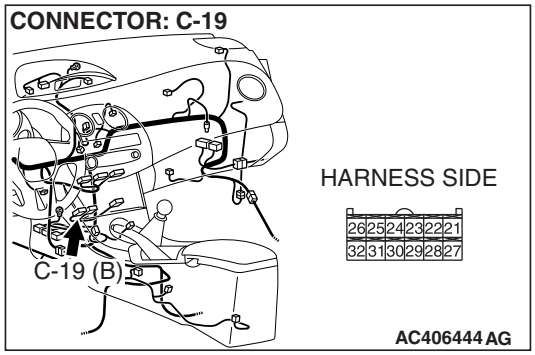
**OK: 1 kΩ or more**

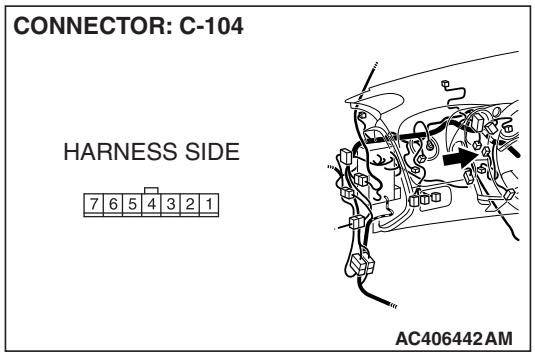
**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 11.

**NO :** Go to Step 10.

**STEP 10. Check the wiring harness between A/C-ECU connector C-19 (terminal 30) and mode selection damper control motor and potentiometer connector C-104 (terminal 2).**



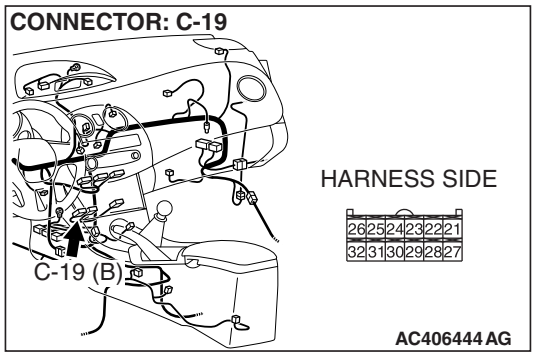

**Q: Is the wiring harness between A/C-ECU connector C-19 (terminal 30) and mode selection damper control motor and potentiometer connector C-104 (terminal 2) in good condition?**

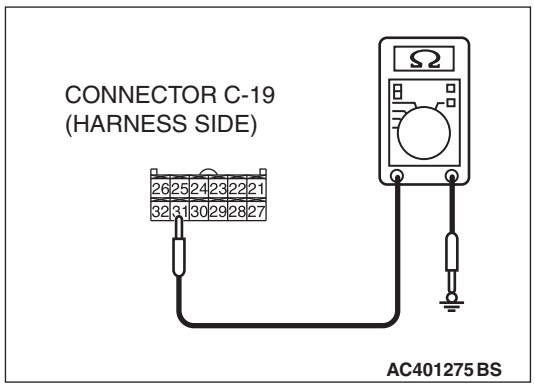
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 11. Measure the resistance at A/C-ECU connector C-19.**

(1) Disconnect A/C-ECU connector C-19, and measure the resistance at the wiring harness side.



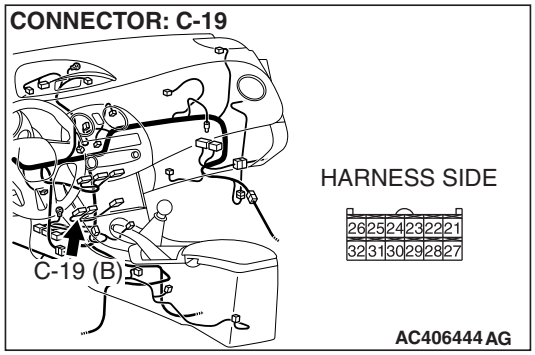

(2) Measure the resistance value between terminal 31 and ground.

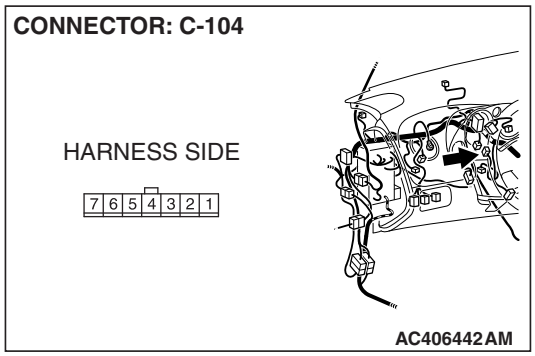
**OK: 1 kΩ or more**

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 13.

**NO :** Go to Step 12.



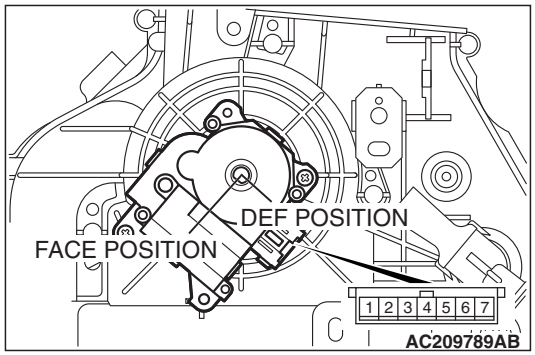




**STEP 12. Check the wiring harness between A/C-ECU connector C-19 (terminal 31) and mode selection damper control motor and potentiometer connector C-104 (terminal 1).**

**Q: Is the wiring harness between A/C-ECU connector C-19 (terminal 31) and mode selection damper control motor and potentiometer connector C-104 (terminal 1) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.




**STEP 13. Check the mode selection damper control motor.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the FACE or DEF position.**

Check the mode selection damper control motor by the following procedures.

| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the FACE position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the FACE position to the DEF position |
| At the DEF position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the DEF position to the FACE position |

**Q: Is the mode selection damper control motor in good condition?**

**YES :** Go to Step 14.

**NO :** Replace the mode selection damper control motor and potentiometer.

**STEP 14. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

## DTC U1073: Bus Off

**⚠ CAUTION**
**If DTC U1073 is set in the A/C-ECU, diagnose the CAN main bus line.**

**⚠ CAUTION**
**Whenever the ECU is replaced, ensure that the communication circuit is normal.**

### TROUBLE JUDGMENT

If the A/C-ECU ceases communicating once (i.e. bus off) and then returns to it, the A/C-ECU will not communicate for three minutes immediately after that point. This three-minute period is called "Penalty mode." Immediately after the A/C-ECU returns to communication, the DTC is set.

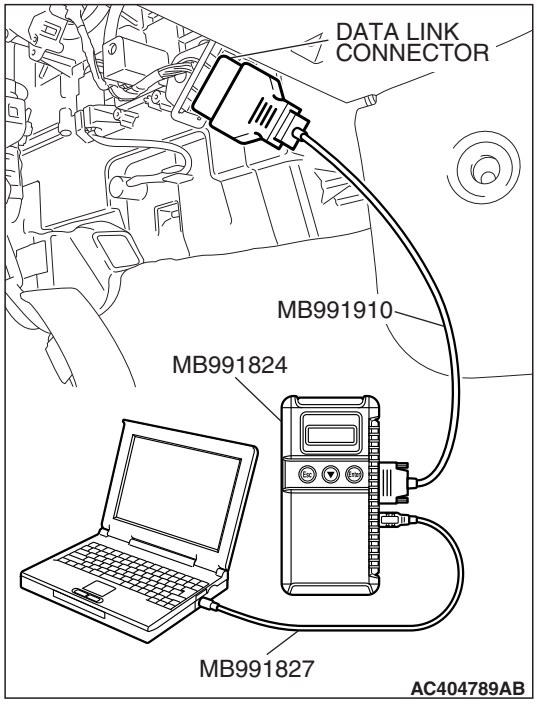
### PROBABLE CAUSES

- Malfunction of the harness (CAN line is open/shorted to ground)
- Malfunction of the A/C-ECU
- Malfunction of connector

### DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: USB Cable
  - MB991910: Main Harness A




**STEP 1. Using scan tool MB991958, diagnose the CAN bus line.**

**⚠ CAUTION**
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the CAN bus line found to be normal?**

**YES :** Go to Step 2.
**NO :** Repair the CAN bus lines (Refer to GROUP 54C, precautions on how to repair the CAN bus lines P.54C-9).

**STEP 2. Recheck for diagnostic trouble code.**
Check again if the DTC is set.
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** There is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14).

**NO :** Go to Step 3.

**STEP 3. Replace the A/C-ECU and then recheck the DTC.**
Check again if the DTC is set.
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete.

**NO :** Go to Step 1.

## DTC U1100: ECM <M/T> or PCM <A/T> Time-out (Related to Engine)

**⚠ CAUTION**
**If DTC U1100 is set in the A/C-ECU, diagnose the CAN main bus line.**

**⚠ CAUTION**
**Whenever the ECU is replaced, ensure that the communication circuit is normal.**

### TROUBLE JUDGMENT

The A/C-ECU receives engine control system-related signals from the ECM <M/T> or PCM <A/T> via CAN bus lines. If the A/C-ECU cannot receive the necessary signals, DTC U1100 will be set.

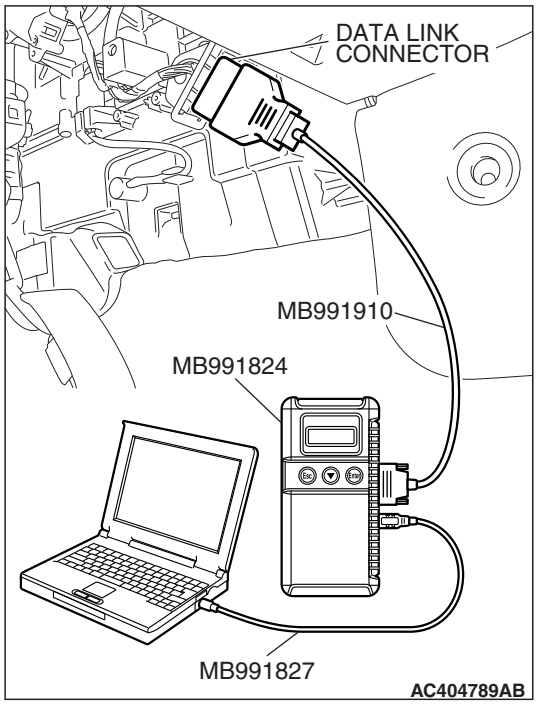
### PROBABLE CAUSES

- Malfunction of the harness (CAN line is open/shorted to ground)
- Malfunction of the ECM <M/T> or PCM <A/T>
- Malfunction of the A/C-ECU
- Malfunction of connector

### DIAGNOSIS

**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**STEP 1. Using scan tool MB991958, diagnose the CAN bus line.**

**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the CAN bus line found to be normal?**

**YES :** Go to Step 2.
**NO :** Repair the CAN bus lines (Refer to GROUP 54C, precautions on how to repair the CAN bus lines P.54C-9).

**STEP 2. Using scan tool MB991958 read the ECM <M/T> or PCM <A/T> diagnostic trouble code.**

Check whether an engine or automatic transaxle DTC are set or not.

(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and automatic transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 3.
**NO :** Diagnose the ECM <M/T> or PCM <A/T> (Refer to GROUP 13A, Diagnostic Trouble Code P.13A-41 <2.4L ENGINE> or GROUP 13B, Diagnostic Trouble Code P.13B-43 <3.8L ENGINE>).

**STEP 3. Using scan tool MB991958, check for any diagnostic trouble code.**

Check if a DTC, which relates to CAN communication-linked systems below, is set.

- Combination meter
  DTC indicating a time-out error related to the engine or automatic transaxle control system
- ABS-ECU
  DTC indicating a time-out error related to the engine or automatic transaxle control system

(1) Turn the ignition switch to the "ON" position.
(2) Check for a DTC related to the relevant system.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 5.
**NO :** Go to Step 4.

**STEP 4. Using scan tool MB991958 read the ECM <M/T> or PCM <A/T> diagnostic trouble code.**

Check whether an engine and automatic transaxle DTCs are set or not.

(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and automatic transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete.
**NO :** Replace the heater control.

**STEP 5. Replace the A/C-ECU and then recheck the DTC.**

Check again if the DTC is set.

(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete.
**NO :** Go to Step 1.

## DTC U1120: Failure Information on ECM <M/T> or PCM <A/T> (Related to Engine)

**⚠ CAUTION**
**If DTC U1120 is set in the A/C-ECU, diagnose the CAN main bus line.**

**⚠ CAUTION**
**Whenever the ECU is replaced, ensure that the communication circuit is normal.**

### TROUBLE JUDGMENT

The A/C-ECU receives the vehicle speed signal and the coolant temperature from the ECM <M/T> or PCM <A/T> via CAN bus lines. If failure information is sent to the vehicle speed signal and the coolant temperature, DTC U1120 will be set.

### TROUBLESHOOTING HINTS

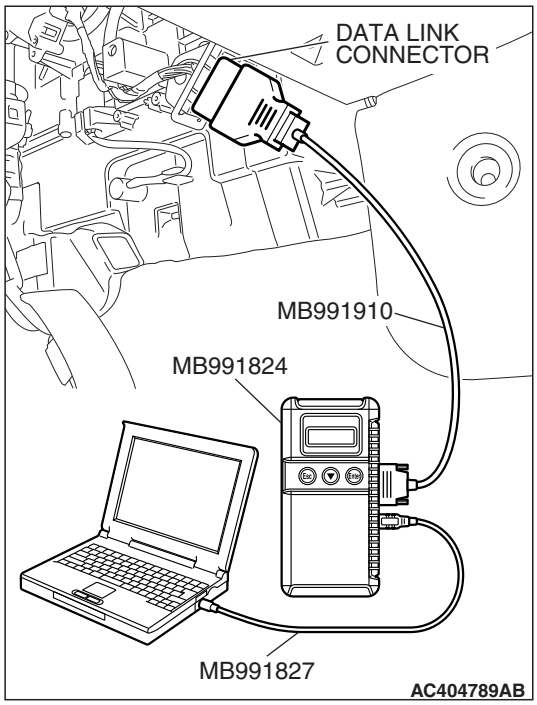
- Malfunction of the A/C-ECU.
- Malfunction of the harness (CAN line is open/shorted to ground)
- Malfunction of connector
- Malfunction of the ECM <M/T> or PCM <A/T>

### DIAGNOSIS

**Required Special Tools:**

- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**STEP 1. Using scan tool MB991958, diagnose the CAN bus line.**




**⚠ CAUTION**
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the CAN bus line found to be normal?**

**YES :** Go to Step 2.
**NO :** Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-17).

**STEP 2. Using scan tool MB991958, read the ECM <M/T> or PCM <A/T> diagnostic trouble code.**

Check whether any engine or automatic transaxle DTCs are set or not.

(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and automatic transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 3.
**NO :** Refer to GROUP 13A, Diagnostic Trouble Code P.13A-41 <2.4L ENGINE> or GROUP 13B, Diagnostic Trouble Code P.13B-43 <3.8L ENGINE>.

**STEP 3. Using scan tool MB991958, check for any diagnostic trouble code.**

Check if a DTC, which relates to CAN communication-linked systems below, is set.

- Combination meter
  DTC indicating a time-out error related to the engine or automatic transaxle control system
- ETACS
  DTC indicating a time-out error related to the engine or automatic transaxle control system

(1) Turn the ignition switch to the "ON" position.
(2) Check for a DTC related to the relevant system.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 5.
**NO :** Go to Step 4.

**STEP 4. Replace the ECM <M/T> or PCM <A/T> and then recheck the DTC.**

Check again if the DTC is set.

(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete.
**NO :** Replace the heater control.

**STEP 5. Replace the A/C-ECU and then recheck the DTC.**

Check again if the DTC is set.

(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** The procedure is complete.
**NO :** Go to Step 1.

## SYMPTOM CHART

M1552009900644

**⚠ CAUTION**

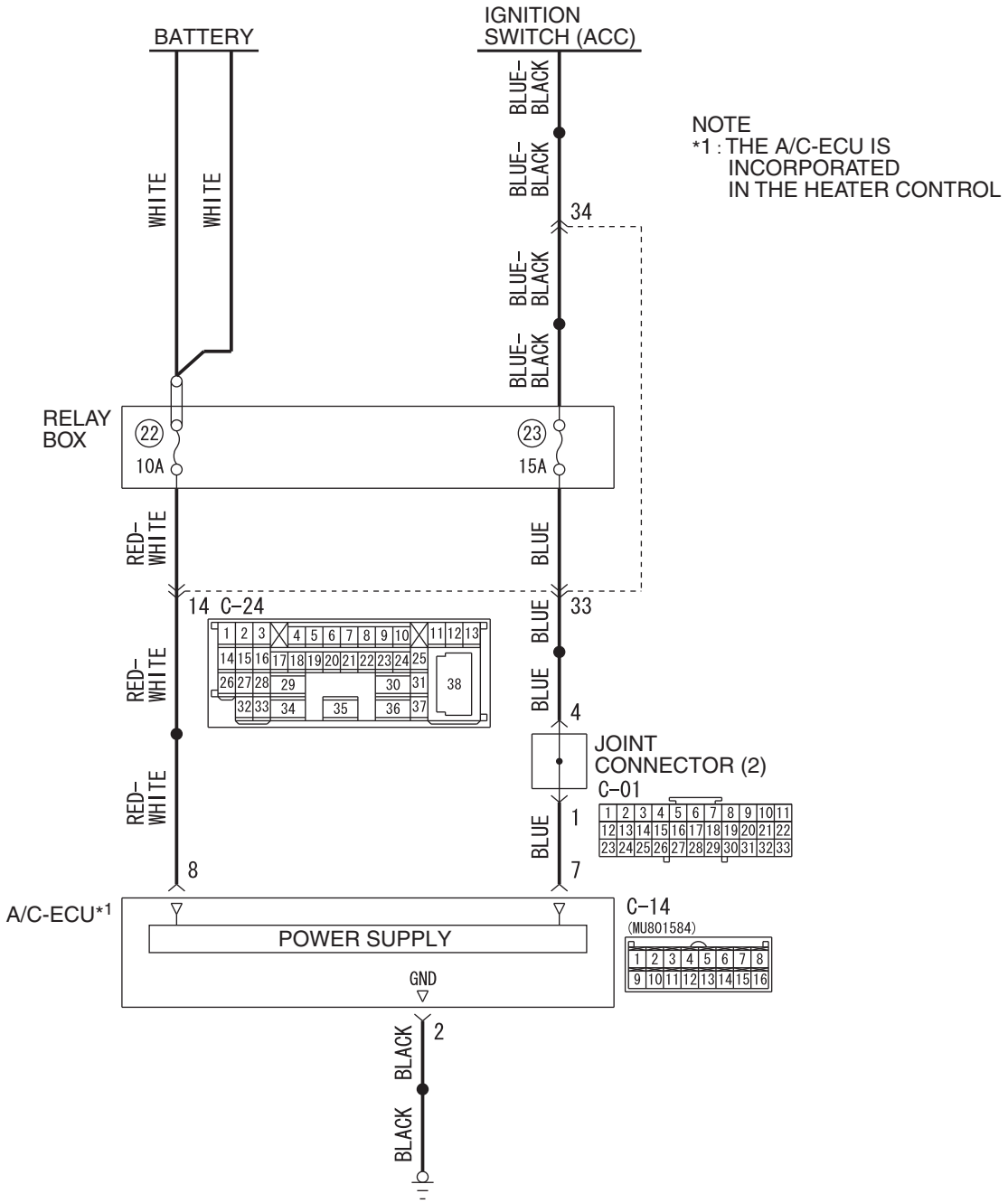
**During diagnosis, a DTC code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.**

| Symptom | Inspection procedure | Reference page |
|---|---|---|
| Malfunction of the A/C-ECU power supply system. | 1 | P.55A-98 |
| Outside/Inside air changeover is not possible. | 2 | P.55A-103 |
| The compressor dose not work. | 3 | P.55A-113 |
| Blower fan and motor do not turn. | 4 | P.55A-129 |
| Blower air amount cannot be changed. | 5 | P.55A-140 |
| When the A/C is operating, temperature inside the passenger compartment does not decrease (cool air is not emitted). | 6 | P.55A-144 |
| The condenser fan and the radiator fan turns at full speed. | 7 | P.55A-147 |
| The condenser fan and the radiator fan do not operate. | 8 | P.55A-152 |
| Condenser fan does not operate. | 9 | P.55A-152 |
| Rear window defogger function does not operate. | 10 | P.55A-162 |
| Rear window defogger timer function does not operate. | 11 | P.55A-176 |

# SYMPTOM PROCEDURES

## INSPECTION PROCEDURE 1: Malfunction of the A/C-ECU Power Supply System.

**A/C-ECU Power Supply Circuit**

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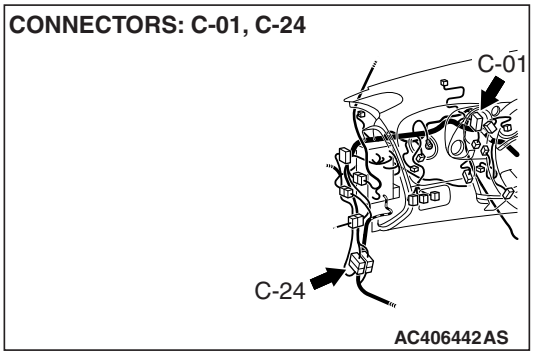
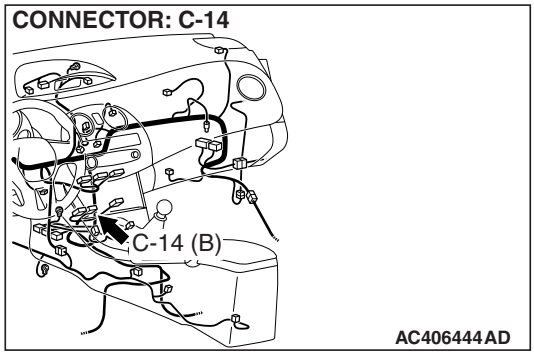



## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

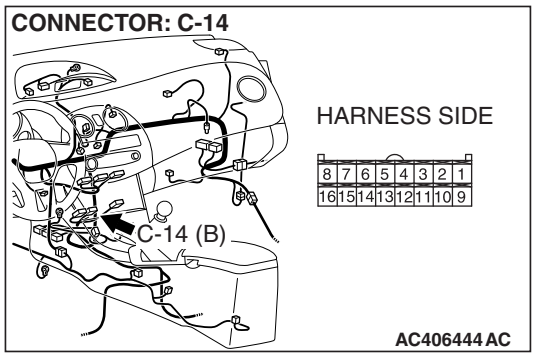
- MB991223: Harness Set
- MB992006: Extra Fine Probe

**STEP 1. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connector C-14 in good condition?**

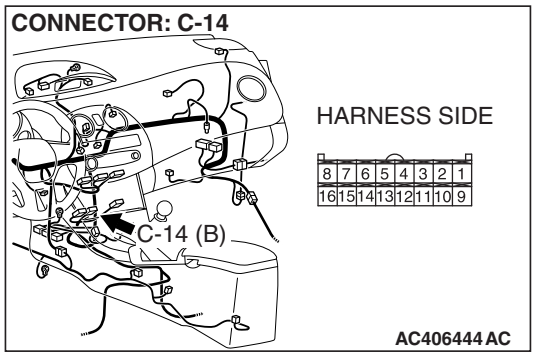
**YES :** Go to Step 2.

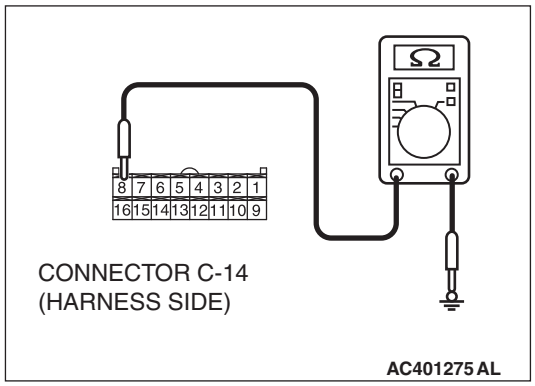
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 2. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and the battery harness, and measure at the wiring harness side.





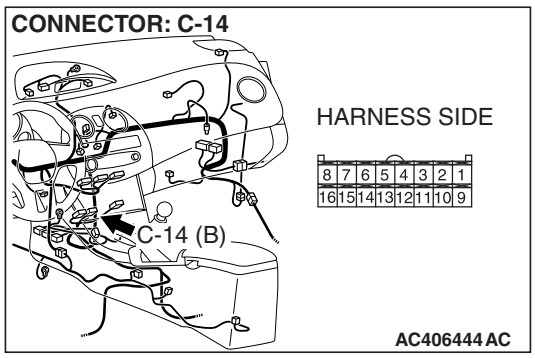

(2) Measure the resistance between A/C-ECU connector C-14 terminal 8 and battery.

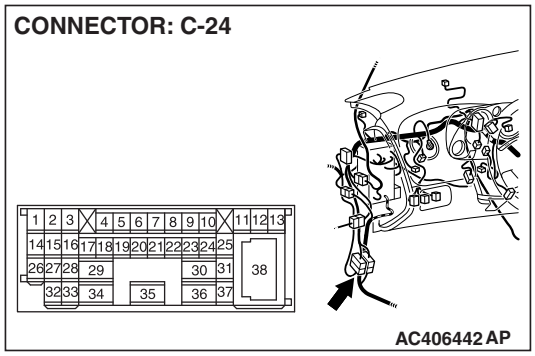
**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 4.
**NO :** Go to Step 3.

**STEP 3. Check the wiring harness between A/C-ECU connector C-14 (terminal 8) and the battery.**



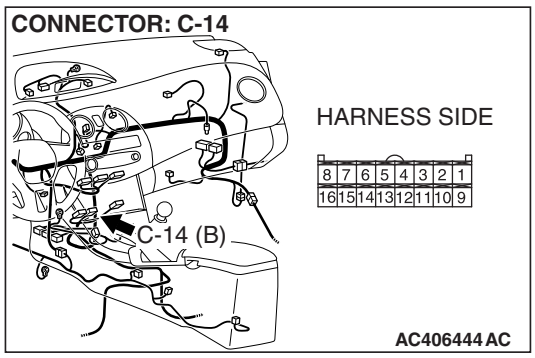

*NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

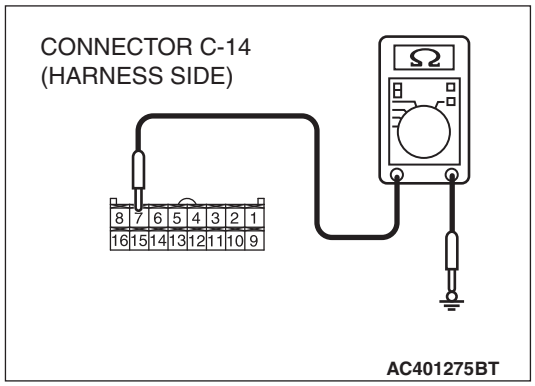
**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 8) and the battery in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 4. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and ignition switch connector, and measure the resistance at the wiring harness side.





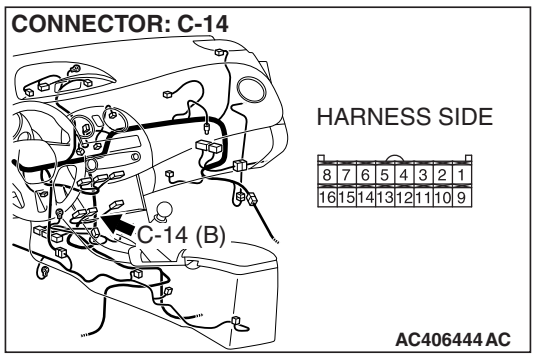

(2) Measure the resistance between A/C-ECU connector C-14 terminal 7 and ignition switch connector.

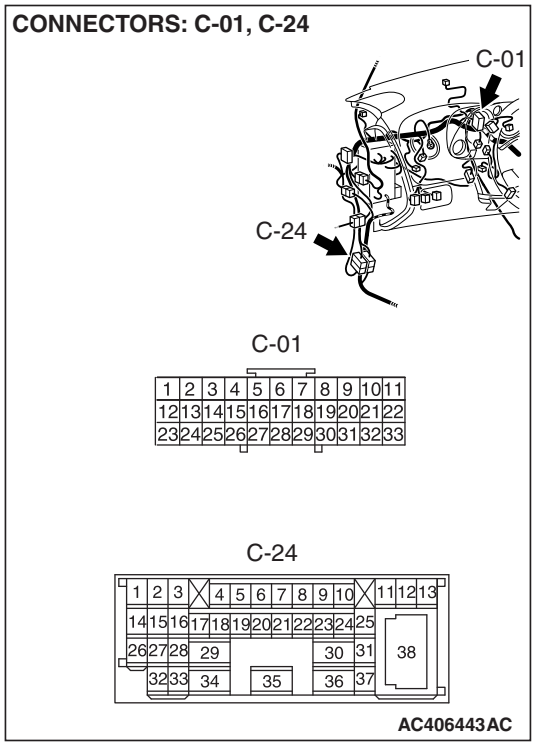
**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 6.
**NO :** Go to Step 5.

**STEP 5. Check the wiring harness between A/C-ECU connector C-14 (terminal 7) and the ignition switch (ACC).**

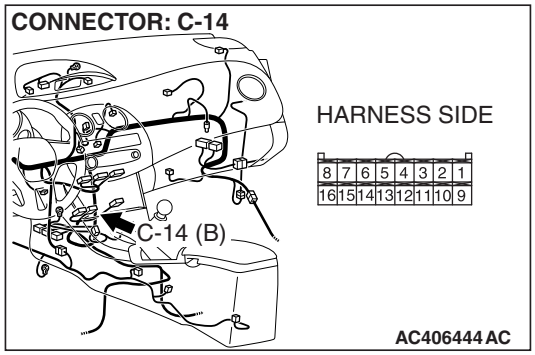



*NOTE: Also check intermediate connector C-24 and joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 and joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

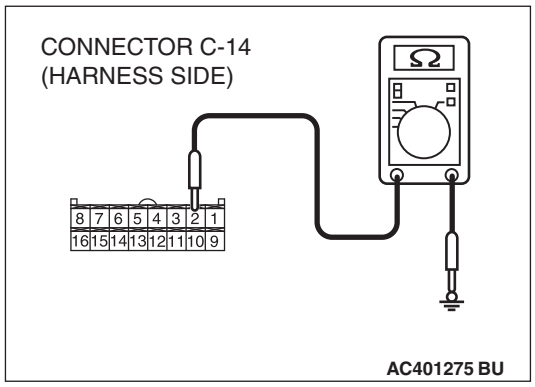
**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 7) and the ignition switch (ACC) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.




**STEP 6. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C-ECU connector C-14 terminal 2 and ground.

**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 8.

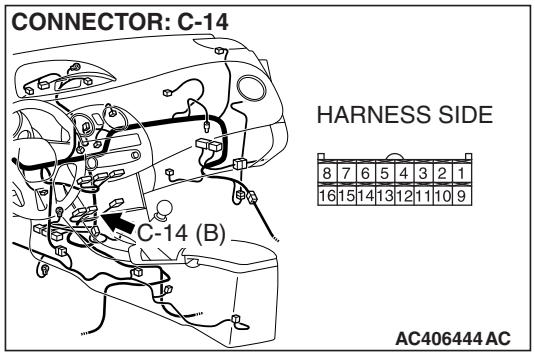
**NO :** Go to Step 7.

**STEP 7. Check the wiring harness between A/C-ECU connector C-14 (terminal 2) and ground.**

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 16) and ground in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.




**STEP 8. Retest the system.**

Check that the A/C works normally.

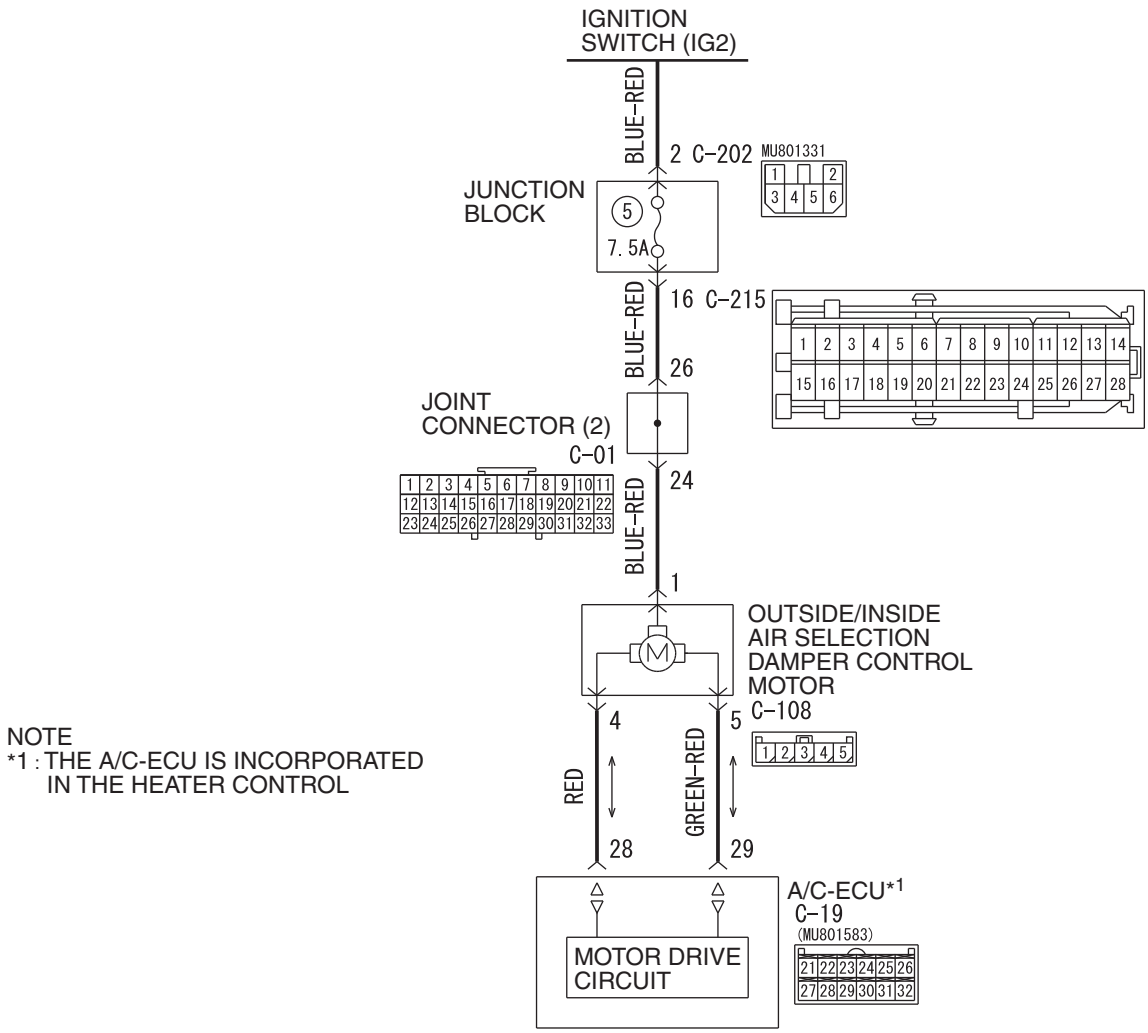
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

## INSPECTION PROCEDURE 2: Outside/Inside Air Changeover is not possible.

**Outside/Inside Air Selection Motor Circuit**

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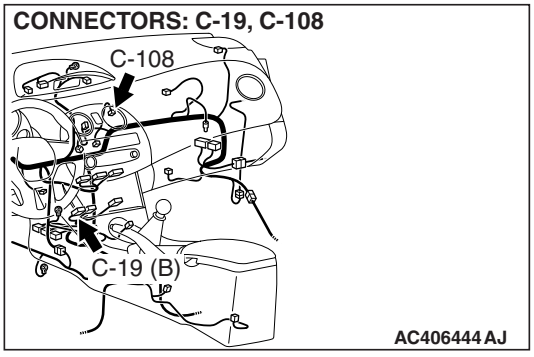
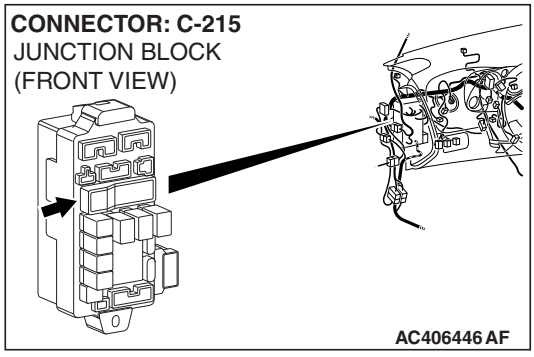



## FUNCTION

Changeover between inside air recirculation mode and fresh air mode

## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness (outside/inside air selection damper control motor circuit is open/shorted to ground)

**TSB Revision**

- Malfunction of the outside/inside air selection damper control motor.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**STEP 1. Using scan tool MB991958, read the diagnostic trouble code.**

**⚠ CAUTION**

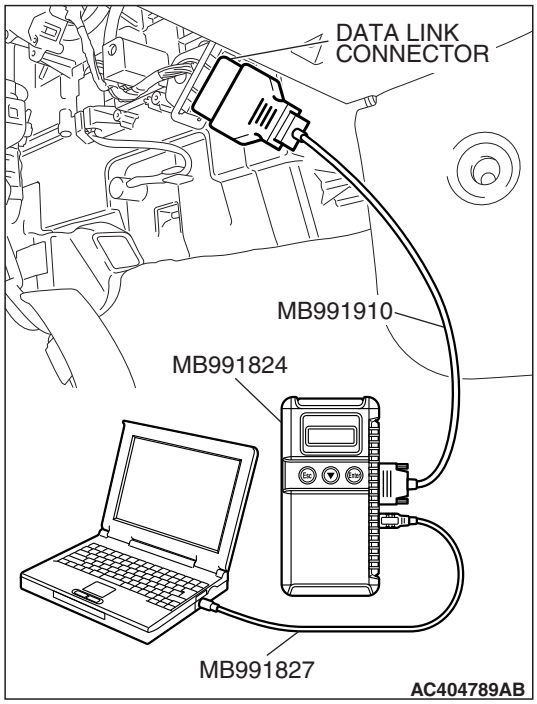
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

Check if an A/C-ECU DTC is set.

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Refer to Diagnostic Trouble Code Chart P.00-14.
**NO :** Go to Step 2.




**STEP 2. Using scan tool MB991958, check actuator test.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
  - Item 72: In/out changeover damper: Fresh
  - Item 73: In/out changeover damper: Recirc
    - Check that the outside/inside air selection damper control motor operates.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the motor operate normally?**

**YES :** Go to Step 3.
**NO :** Go to Step 4.

**STEP 3. Recheck for diagnostic trouble code.**

Recheck if the DTC is set.

(1) Erase the DTC.
(2) Turn the ignition switch to "OFF" position.
(3) Turn the ignition switch to "ON" position.
(4) Drive the vehicle and check if the diagnostic trouble code is set.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

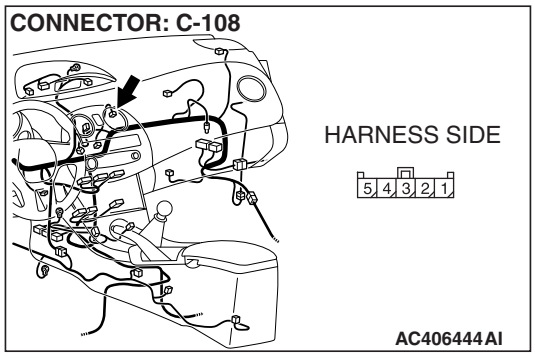
**NO :** Replace the heater control.

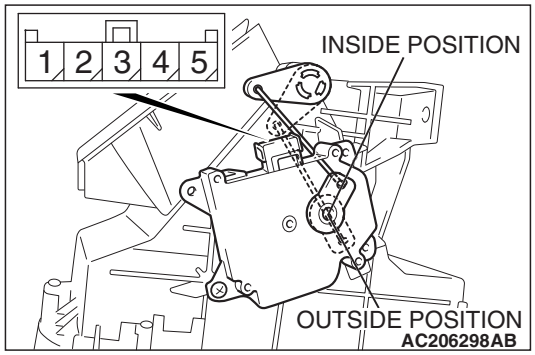
**STEP 4. Check outside/inside air selection damper control motor connector C-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is outside/inside air selection damper control motor connector C-108 in good condition?**

**YES :** Go to Step 5.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.






**STEP 5. Check the outside/inside air selection damper control motor.**

**⚠ CAUTION**

**Cut off the battery voltage when the damper is in the inside/outside air position.**

Check the outside/inside air selection damper control motor by the following procedures.

| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the outside position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 5 to the negative battery terminal | The lever moves from the outside position to the inside position |
| At the inside position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 4 to the negative battery terminal | The lever moves from the inside position to the outside position |

**Q: Does the outside/inside air selection damper control motor work normally?**

**YES :** Go to Step 6.

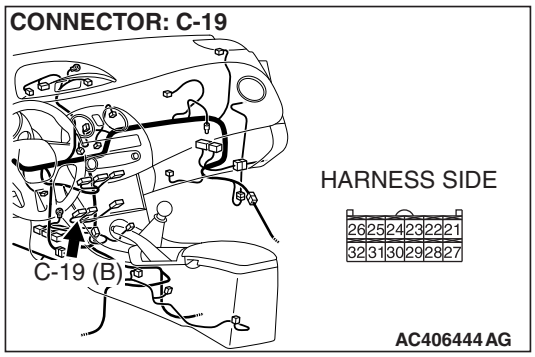
**NO :** Replace the outside/inside air selection damper control motor.

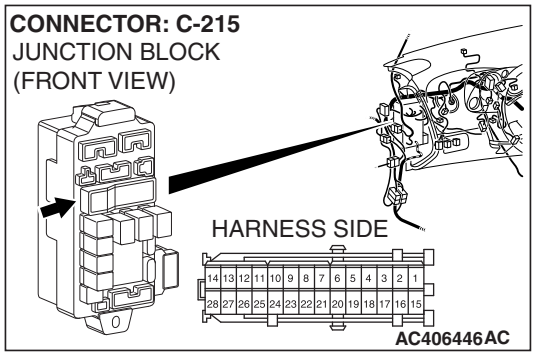
**STEP 6. Check A/C-ECU connector C-19 and junction block connector C-215 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Are A/C-ECU connector C-19 and junction block connector C-215 in good condition?**

**YES :** Go to Step 7.

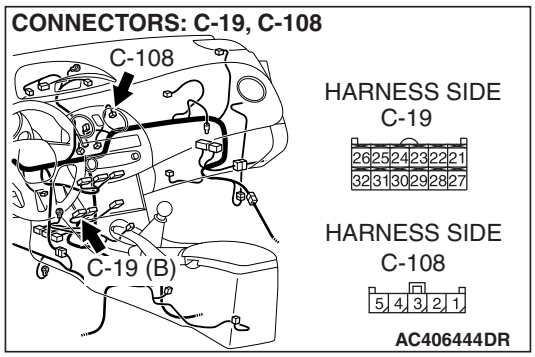
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 7. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-19 and outside/inside air selection damper control motor connector C-108, and measure the resistance at the wiring harness side.



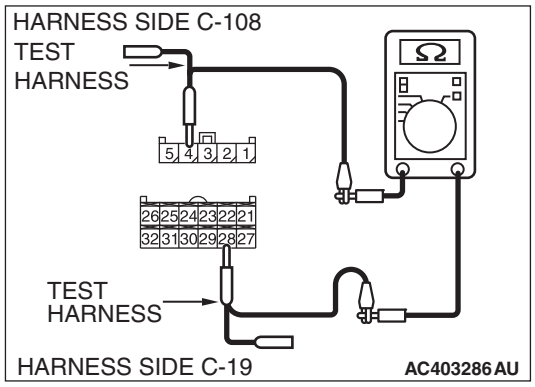

(2) Measure the resistance between A/C-ECU connector C-19 terminal 28 and outside/inside air selection damper control motor connector C-108 terminal 4.

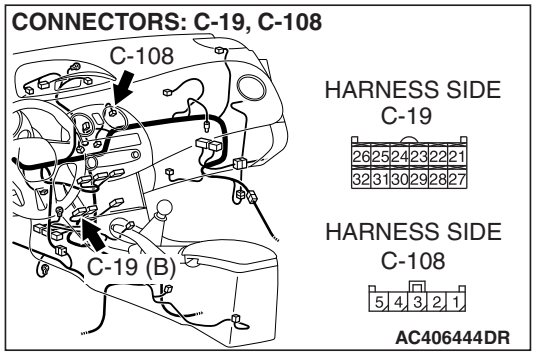
**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 9.

**NO :** Go to Step 8.



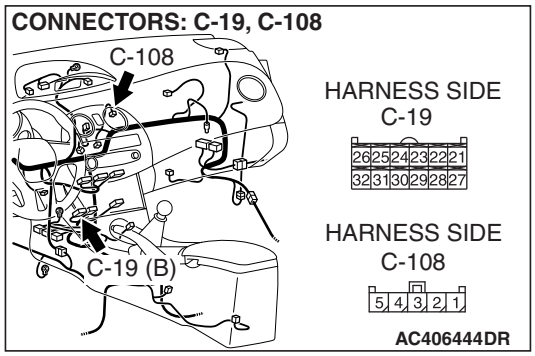



**STEP 8. Check the wiring harness between A/C-ECU connector C-19 (terminal 28) and outside/inside air selection damper control motor connector C-108 (terminal 4).**

**Q: Is the wiring harness between A/C-ECU connector C-19 (terminal 28) and outside/inside air selection damper control motor connector C-108 (terminal 4) in good condition?**

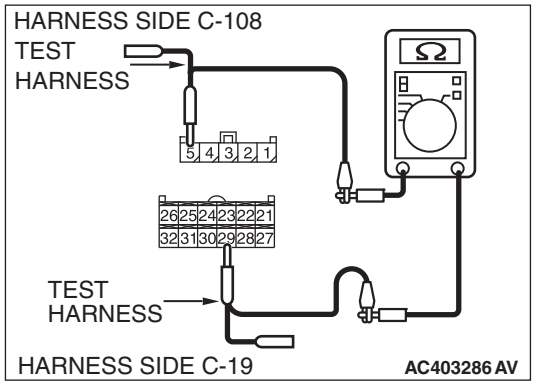
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.




**STEP 9. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-19 and outside/inside air selection damper control motor connector C-108, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C-ECU connector C-19 terminal 29 and outside/inside air selection damper control motor connector C-108 terminal 5.

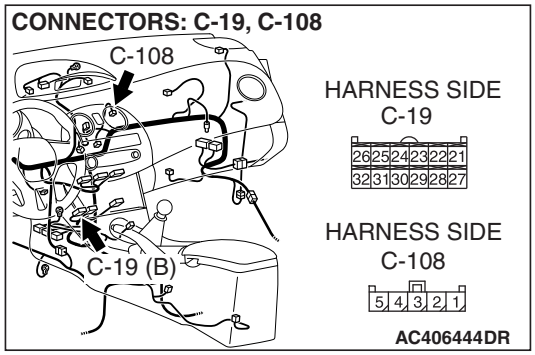
**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 11.

**NO :** Go to Step 10.

**STEP 10. Check the wiring harness between A/C-ECU connector C-19 (terminal 29) and outside/inside air selection damper control motor connector C-108 (terminal 5).**



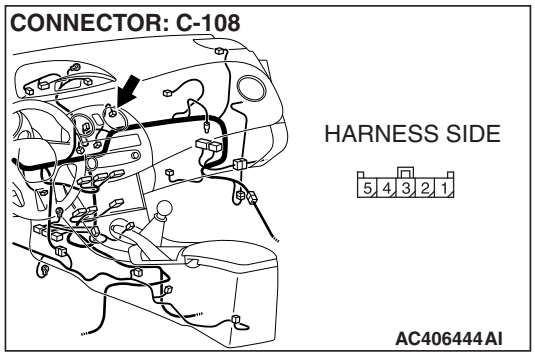

**Q: Is the wiring harness between A/C-ECU connector C-19 (terminal 29) and outside/inside air selection damper control motor connector C-108 (terminal 5) in good condition?**

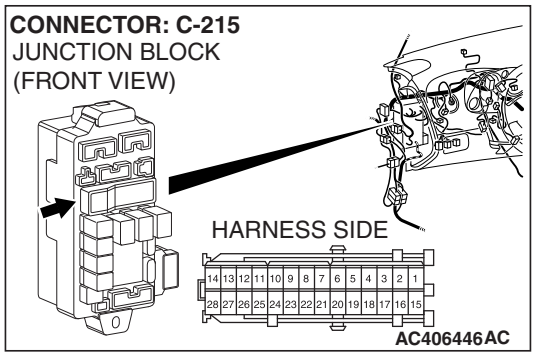
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

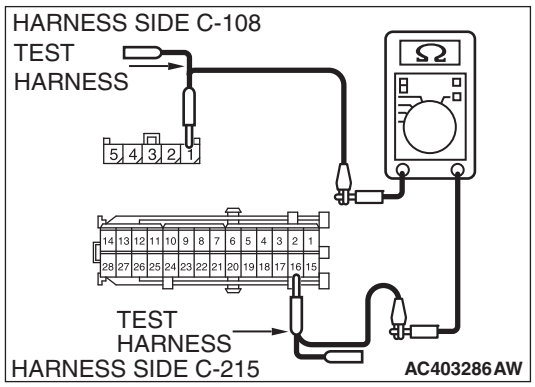
**NO :** Repair the wiring harness.

**STEP 11. Check the wiring harness for open circuit.**

(1) Disconnect junction block connector C-215 and outside/inside air selection damper control motor connector C-108, and measure the resistance at the wiring harness side.




(2) Measure the resistance between junction block connector C-215 terminal 16 and outside/inside air selection damper control motor connector C-108 terminal 1.

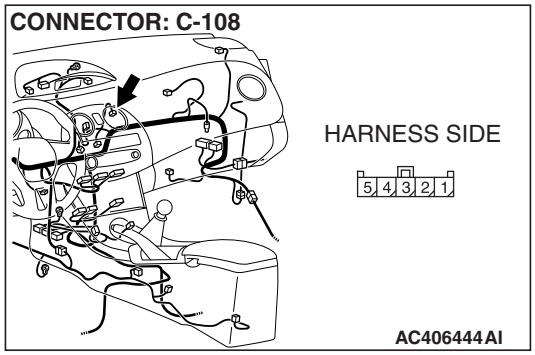
**OK: Less than 2 ohms**

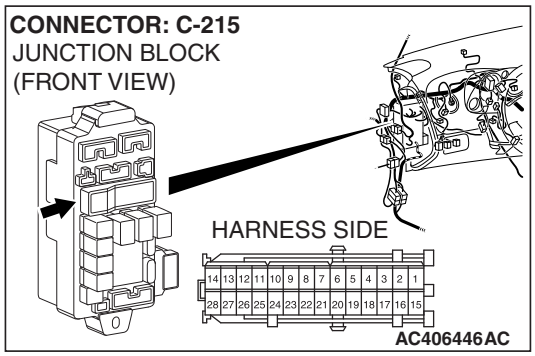
**Q: Is the check result normal?**

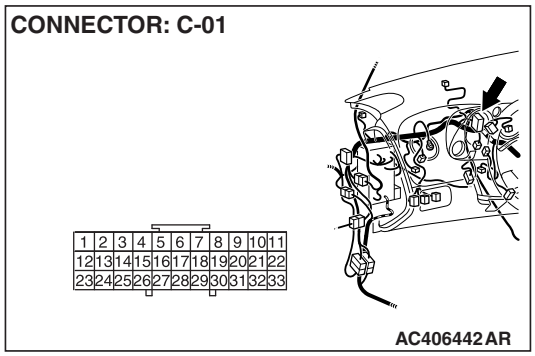
**YES :** Go to Step 13.

**NO :** Go to Step 12.

**STEP 12. Check the wiring harness between junction block connector C-215 (terminal 16) and outside/inside air selection damper control motor connector C-108 (terminal 1).**



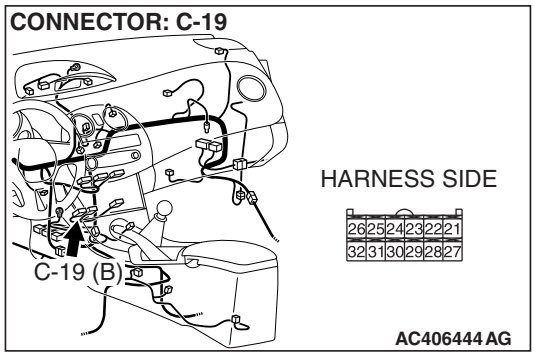

*NOTE: Also check joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between junction block connector C-215 (terminal 16) and outside/inside air selection damper control motor connector C-108 (terminal 1) in good condition?**

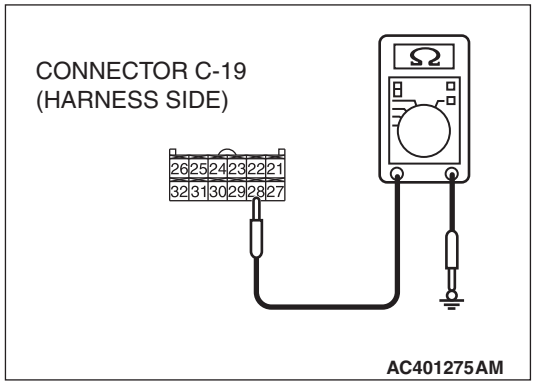
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 13. Measure the resistance at A/C-ECU connector C-19.**




(1) Disconnect A/C-ECU connector C-19, and measure the resistance at the wiring harness side.



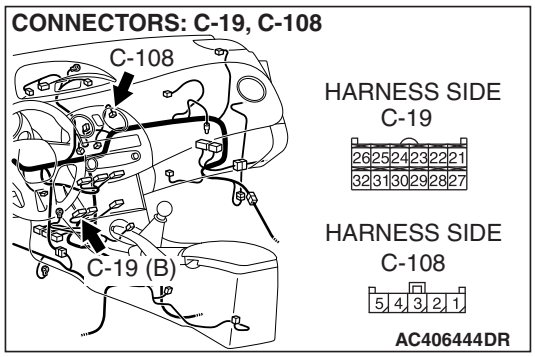

(2) Measure the resistance value between terminal 28 and ground.

**OK: 1.5 kΩ or more**

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 15.
**NO :** Go to Step 14.

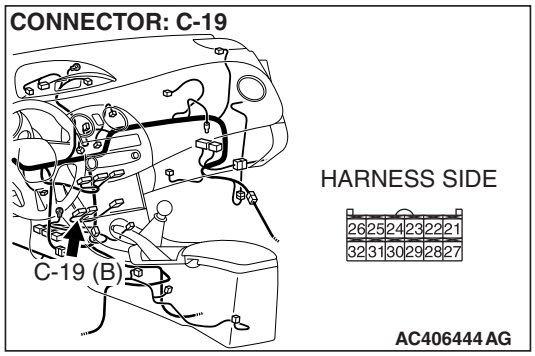
**STEP 14. Check the wiring harness between A/C-ECU connector C-19 (terminal 28) and outside/inside air selection damper control motor connector C-108 (terminal 4).**



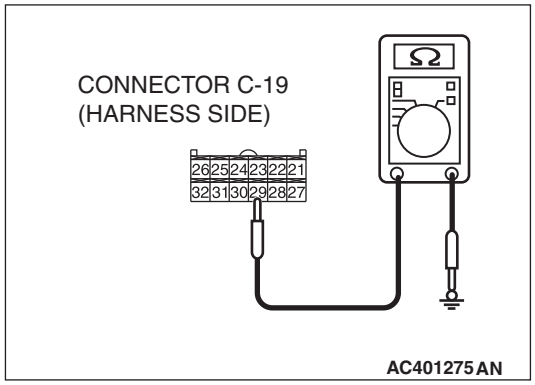

**Q: Is the wiring harness between A/C-ECU connector C-19 (terminal 28) and outside/inside air selection damper control motor connector C-108 (terminal 4) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 15. Measure the resistance at A/C-ECU connector C-19.**




(1) Disconnect A/C-ECU connector C-19, and measure the resistance at the wiring harness side.



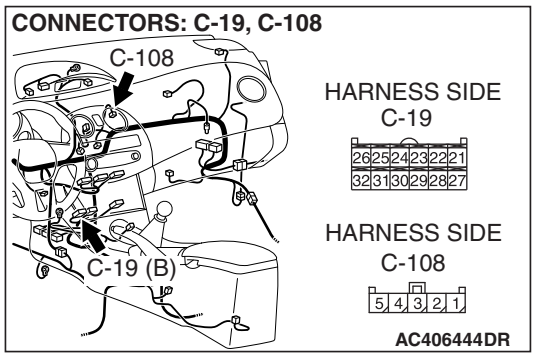

(2) Measure the resistance value between terminal 29 and ground.

**OK: 1.5 kΩ or more**

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 17.
**NO :** Go to Step 16.

**STEP 16. Check the wiring harness between A/C-ECU connector C-19 (terminal 29) and outside/inside air selection damper control motor connector C-108 (terminal 5).**




**Q: Is the wiring harness between A/C-ECU connector C-19 (terminal 29) and outside/inside air selection damper control motor connector C-108 (terminal 5) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 17. Retest the system.**

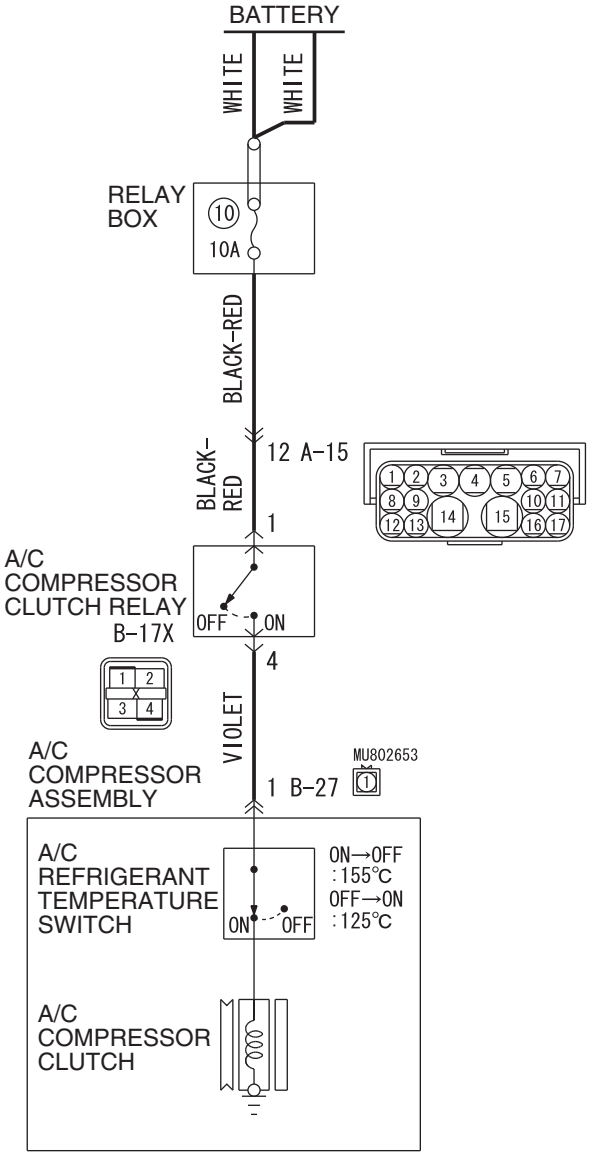
Check the trouble symptom again.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the heater control.

## INSPECTION PROCEDURE 3: The Compressor does not Work.

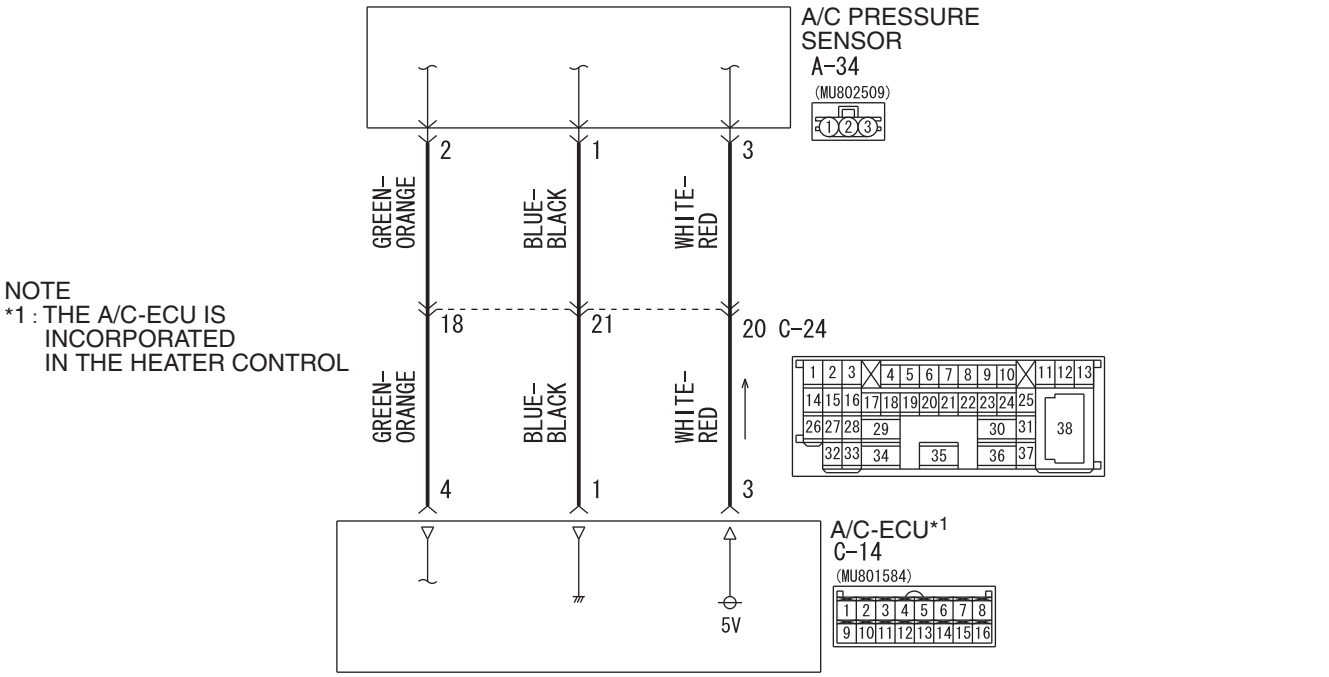
**A/C Compressor Circuit**



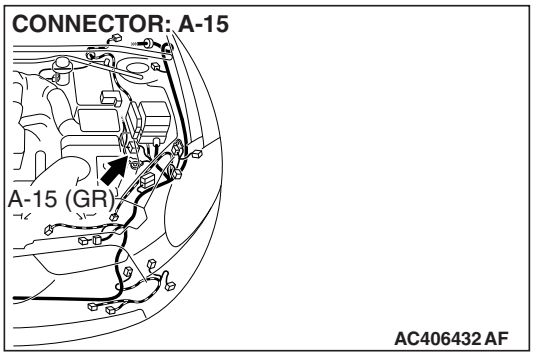

W6P55M014A

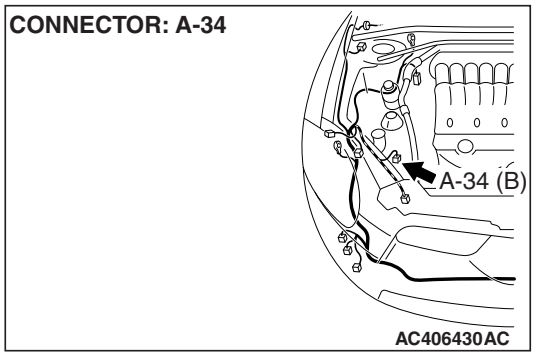
**TSB Revision**

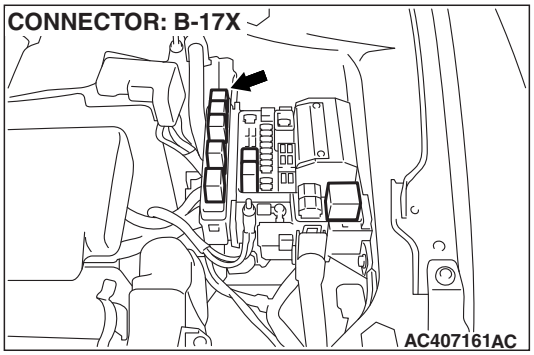
**A/C Pressure Sensor Circuit**

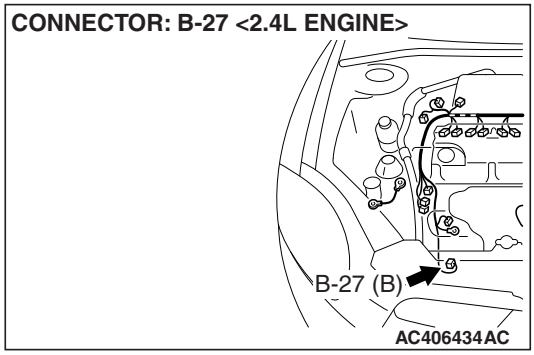



W6P55M018A



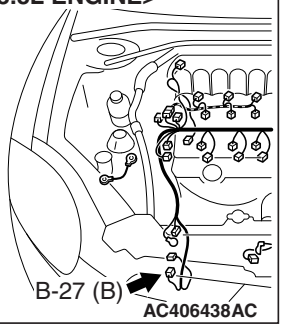



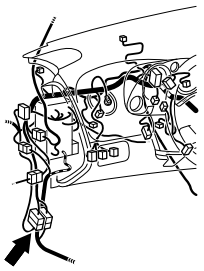

**TSB Revision**

CONNECTOR: B-27 <3.8L ENGINE>



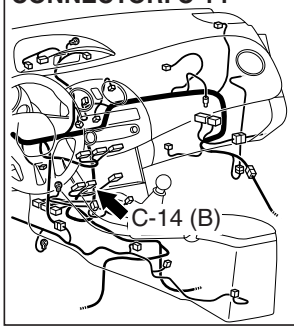

AC406438AC

CONNECTOR: C-24



AC406442AQ

CONNECTOR: C-14




AC406444AD

## FUNCTION

Compressor that recovers the refrigerant, which evaporated in the evaporator and became a high-temperature and high-pressure gas, and turns it into liquid again.

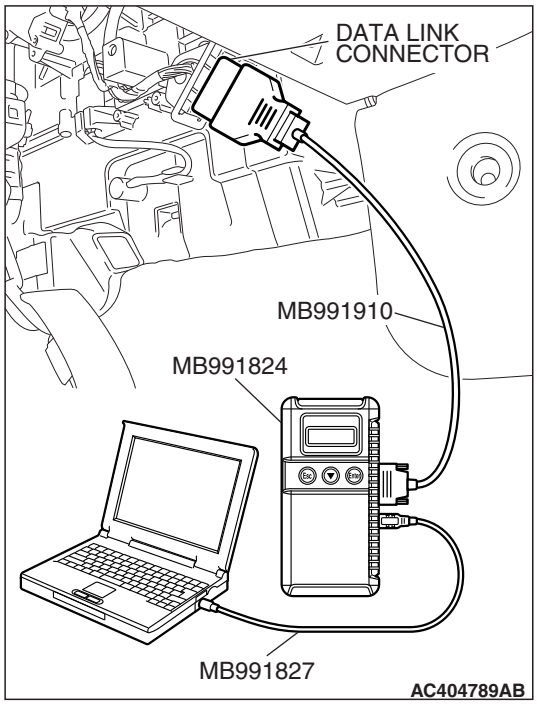
## PROBABLE CAUSES

- Insufficient refrigerant
- Malfunction of connector.
- Malfunction of the harness (A/C compressor circuit is open/shorted to ground)
- Malfunction of the A/C pressure sensor.
- Malfunction of the A/C compressor.
- Malfunction of the A/C compressor clutch relay.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991658: Test Harness Set
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A




**STEP 1. Using scan tool MB991958, diagnose the CAN bus line.**

**⚠ CAUTION**
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the CAN bus line found to be normal?**

**YES :** Go to Step 2.
**NO :** Repair the CAN bus lines (Refer to GROUP 54C, precautions on how to repair the CAN bus lines P.54C-17).

**STEP 2. Using scan tool MB991958, read the diagnostic trouble code.**

Check if an A/C-ECU DTC is set.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Refer to Diagnostic Trouble Code Chart P.55A-9.
**NO :** Go to Step 3.

**STEP 3. Using scan tool MB991958, check data list.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
- Item 66: Air conditioning switch

*NOTE: Check that the scan tool displays "ON" when the A/C switch is ON.*

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the scan tool display "ON" when the A/C switch is on?**

**YES :** Go to Step 5.
**NO :** Go to Step 4.

**STEP 4. Retest the system.**
Check the trouble symptom again.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

**STEP 5. Check the refrigerant level.**
Refer to P.00E-2.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 6.

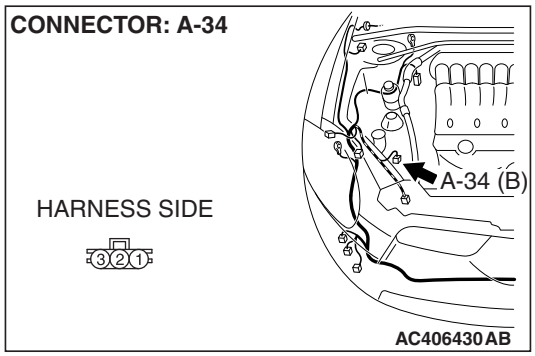
**NO :** Replenish the refrigerant.

**STEP 6. Check A/C pressure sensor connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C pressure sensor connector A-34 in good condition?**

**YES :** Go to Step 7.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

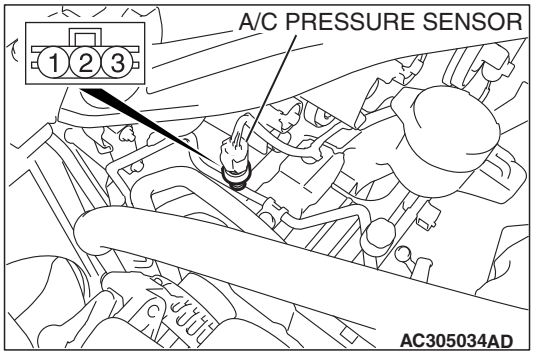


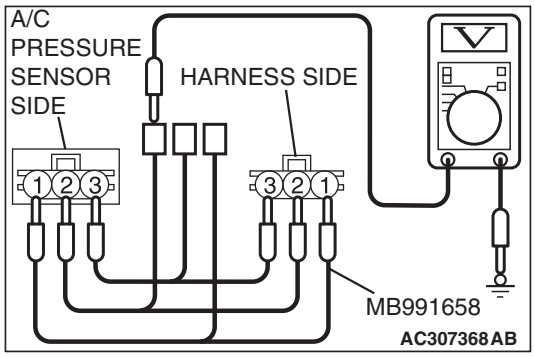
**STEP 7. Check the A/C pressure sensor operation.**

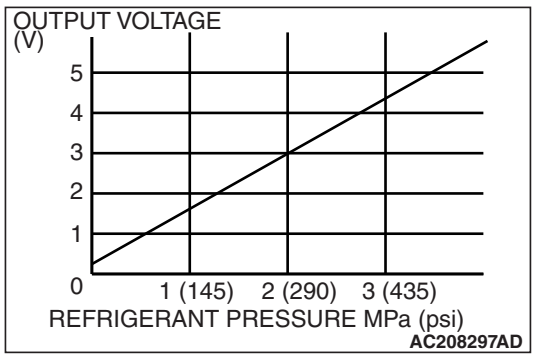
(1) Assemble a gauge manifold on the high pressure service valve.

(2) Disconnect the A/C pressure sensor connector and connect special tool test harness MB991658 as shown in the illustration.

(3) Turn ON the engine and then turn ON the A/C switch.




(4) At this time, check to see that the voltage of A/C pressure sensor terminal No. 2 reflects the specifications of the figure.

*NOTE: The allowance shall be defined as ±5%.*

**Q: Is the A/C pressure sensor operating properly?**

**YES :** Go to Step 8.

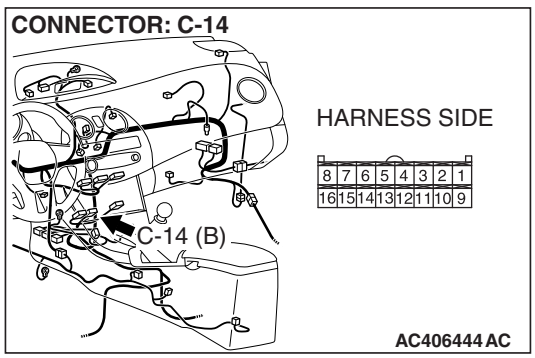
**NO :** Replace the A/C pressure sensor.

**STEP 8. Check A/C-ECU connector C-14 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connector C-14 in good condition?**

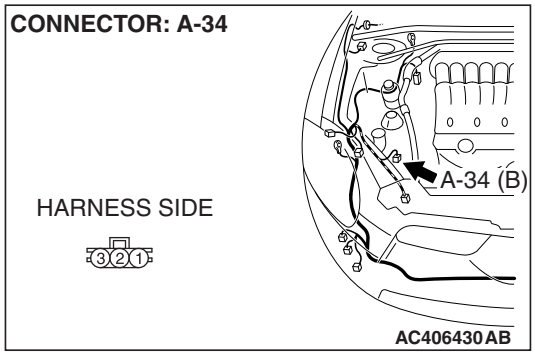
**YES :** Go to Step 9.

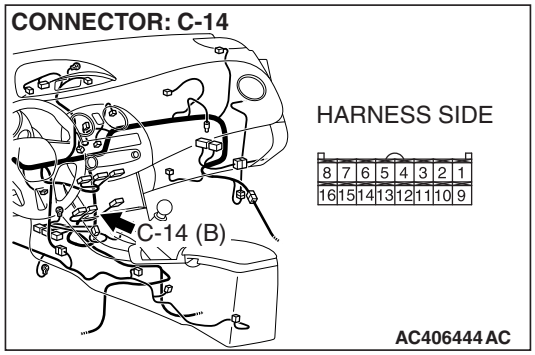
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

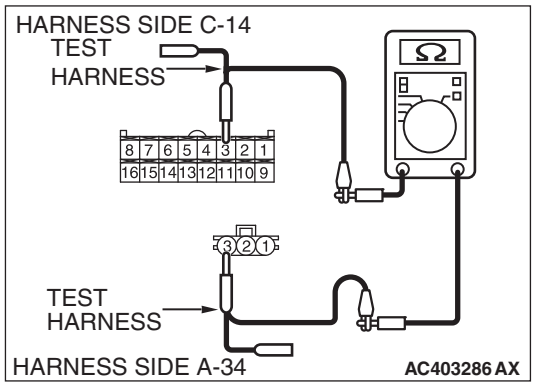


**STEP 9. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and A/C pressure sensor connector A-34, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C-ECU connector C-14 terminal 3 and A/C pressure sensor connector A-34 terminal 3.

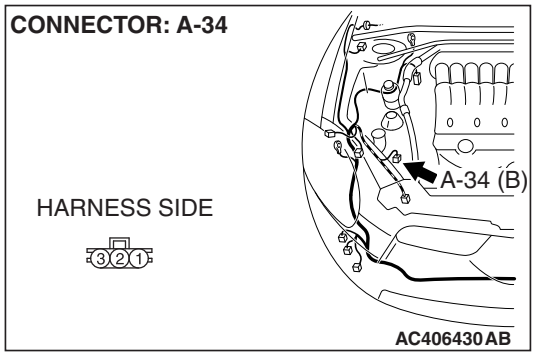
**OK: Less than 2 ohms**

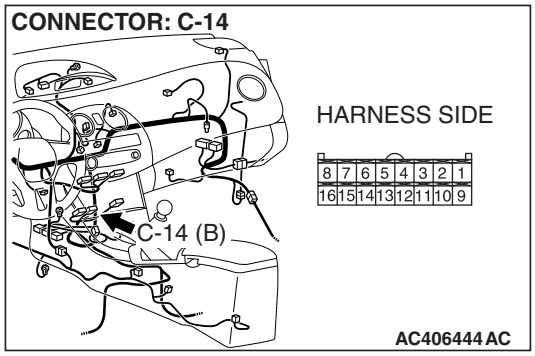
**Q: Is the check result normal?**

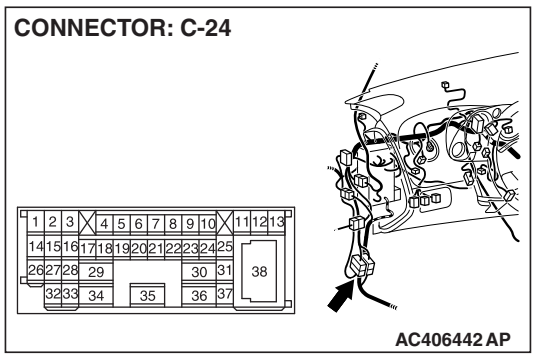
**YES :** Go to Step 11.

**NO :** Go to Step 10.

**STEP 10. Check the wiring harness between A/C-ECU connector C-14 (terminal 3) and A/C pressure sensor connector A-34 (terminal 3).**



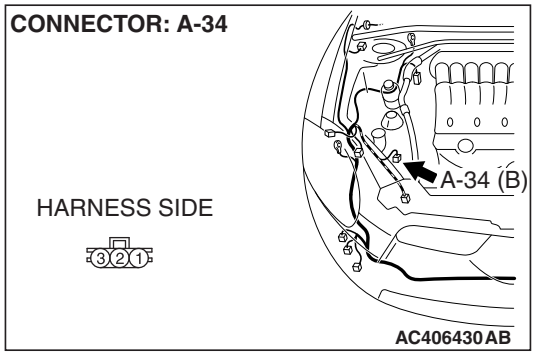



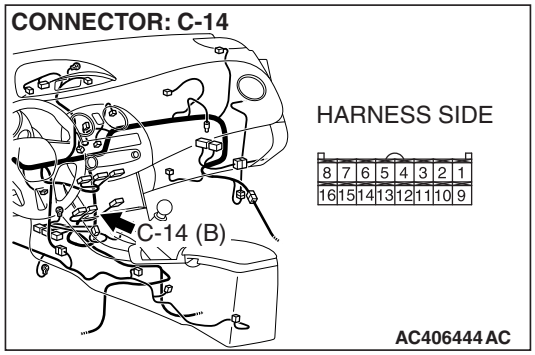

*NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

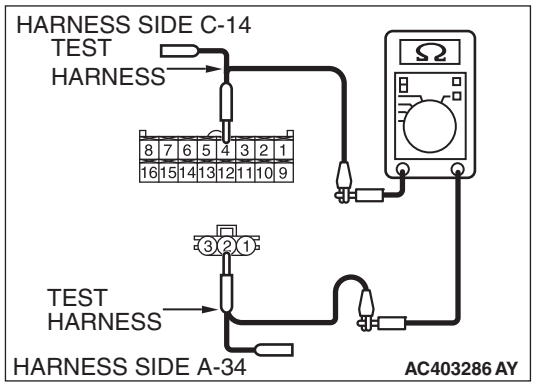
**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 3) and A/C pressure sensor connector A-34 (terminal 3) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.




**STEP 11. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and A/C pressure sensor connector A-34, and measure the resistance at the wiring harness side.

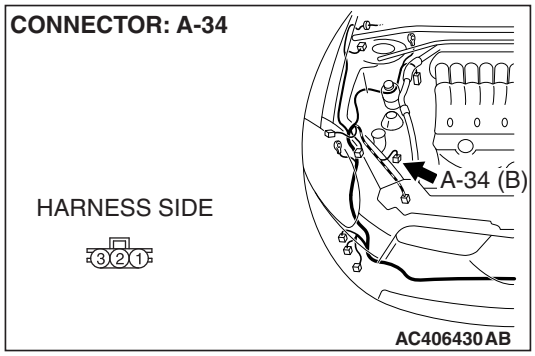
(2) Measure the resistance between A/C-ECU connector C-14 terminal 4 and A/C pressure sensor connector A-34 terminal 2.

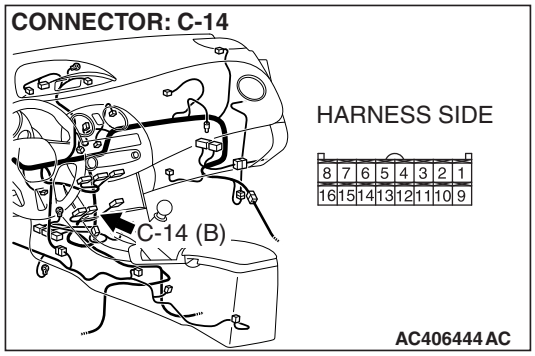
**OK: Less than 2 ohms**

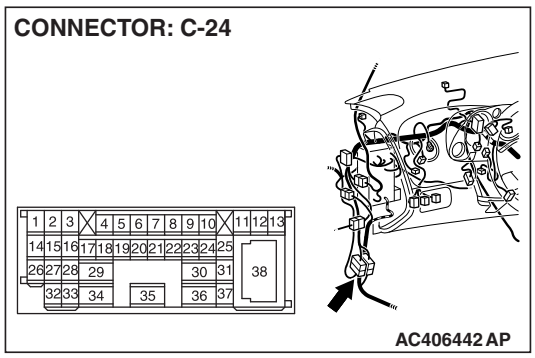
**Q: Is the check result normal?**

**YES :** Go to Step 13.
**NO :** Go to Step 12.

**STEP 12. Check the wiring harness between A/C-ECU connector C-14 (terminal 4) and A/C pressure sensor connector A-34 (terminal 2).**



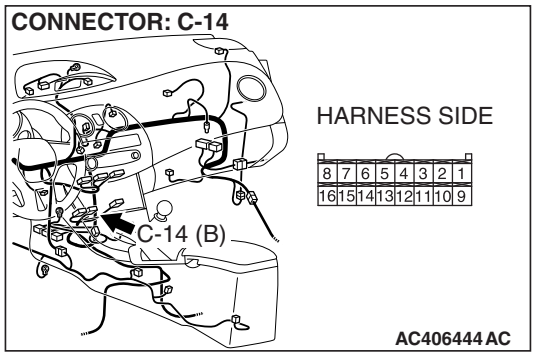

*NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 4) and A/C pressure sensor connector A-34 (terminal 2) in good condition?**

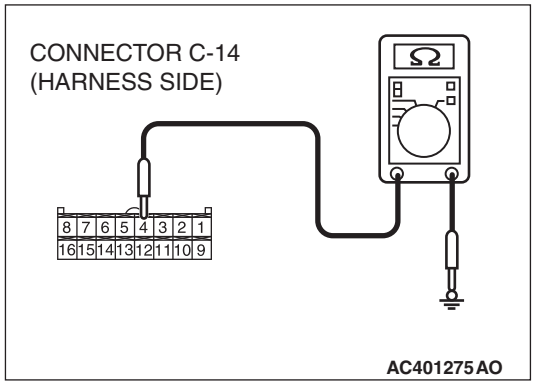
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 13. Measure the resistance at A/C-ECU connector C-14.**




(1) Disconnect A/C-ECU connector C-14, and measure the resistance at the wiring harness side.



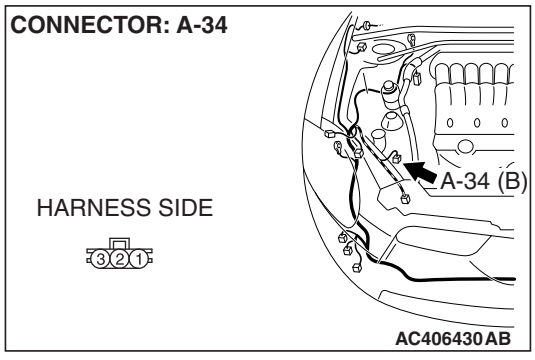

(2) Measure the resistance value between terminal 4 and ground.

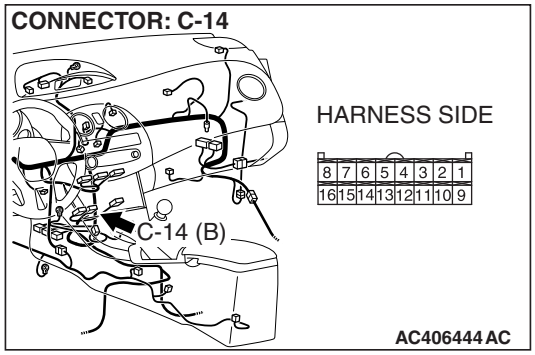
**OK: 1 kΩ or more**

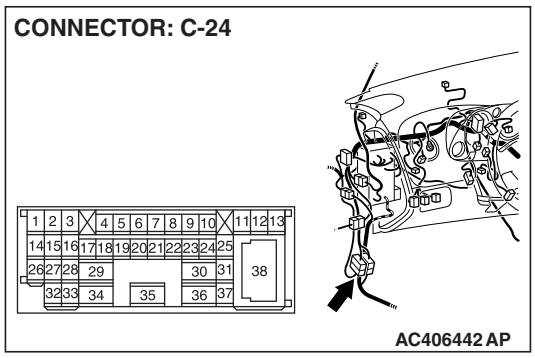
**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 15.
**NO :** Go to Step 14.

**STEP 14. Check the wiring harness between A/C-ECU connector C-14 (terminal 4) and A/C pressure sensor connector A-34 (terminal 2).**





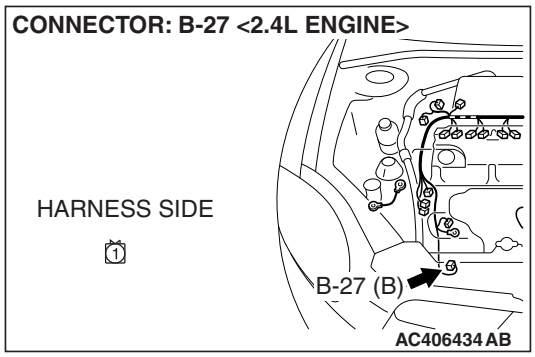

*NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

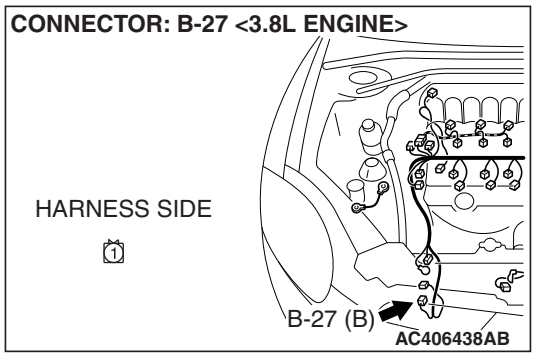
**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 4) and A/C pressure sensor connector A-34 (terminal 2) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 15. Check A/C compressor assembly connector B-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**



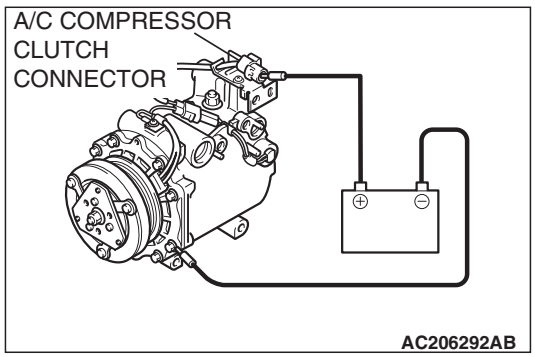

**Q: Is A/C compressor assembly connector B-27 in good condition?**

**YES :** Go to Step 16.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

**STEP 16. Check the A/C compressor clutch operation.**

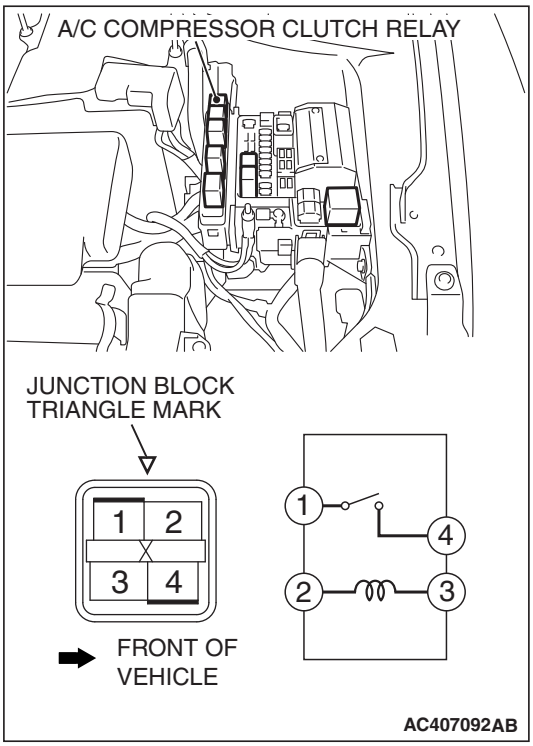
Connect the compressor connector terminal to the battery positive (+) terminal and ground the battery's negative (-) terminal to the compressor unit. At that time, the A/C compressor clutch should make a definite operating sound.




**Q: Can the sound (click) of the A/C compressor clutch operation be heard?**

**YES :** Go to Step 17.

**NO :** Replace the compressor magnet clutch.




**STEP 17. Check the A/C compressor clutch relay continuity.**

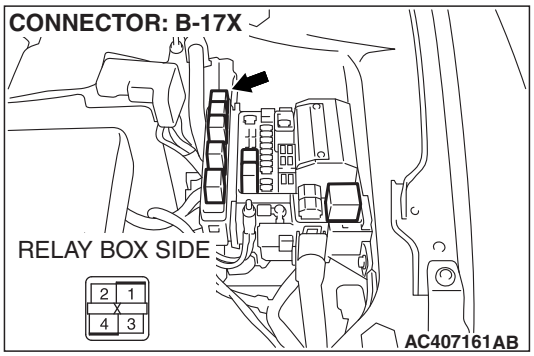
Follow the table below to check the A/C compressor clutch relay for continuity.

| Battery voltage | Tester connection | Specified condition |
|---|---|---|
| Not applied | 1 – 4 | Open circuit |
| • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 3 to the negative battery terminal | 1 – 4 | Less than 2 ohms |

**Q: Is the A/C compressor clutch relay in good condition?**

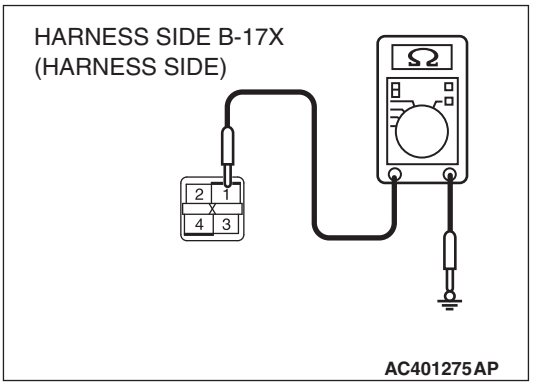
**YES :** Go to Step 18.

**NO :** Replace the A/C compressor clutch relay.




**STEP 18. Check the wiring harness for open circuit.**

(1) Disconnect A/C compressor clutch relay connector B-17X, and measure the resistance at the wiring harness side.




(2) Measure the resistance between A/C compressor clutch relay connector B-17X terminal 1 and the battery.

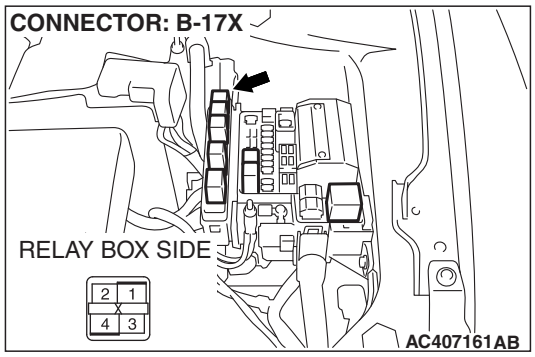
**OK: Less than 2 ohms**

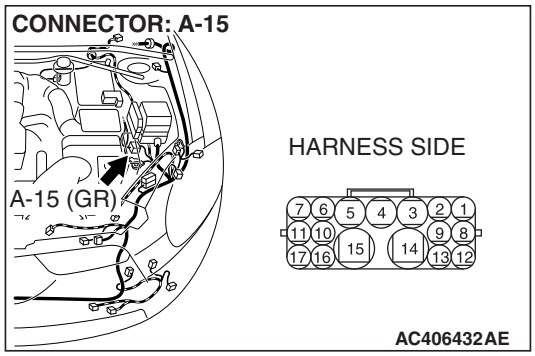
**Q: Is the check result normal?**

**YES :** Go to Step 20.

**NO :** Go to Step 19.

**STEP 19. Check the wiring harness between A/C compressor clutch relay connector B-17X (terminal 1) and the battery.**



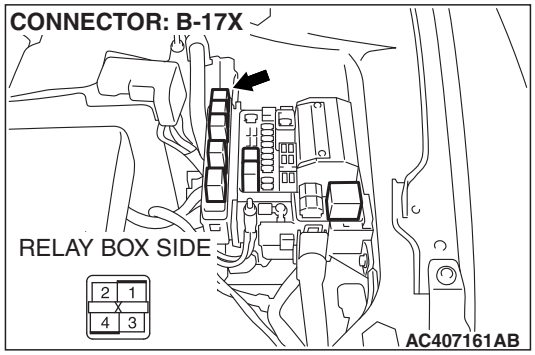



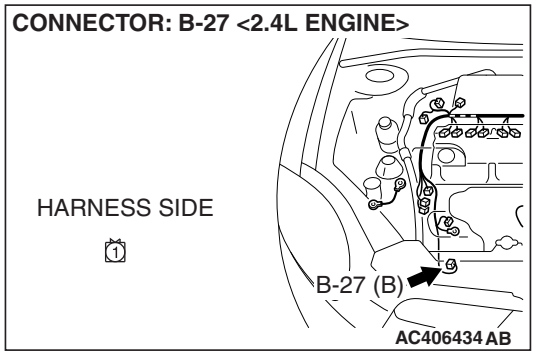

*NOTE: Also check intermediate connector A-15 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-15 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

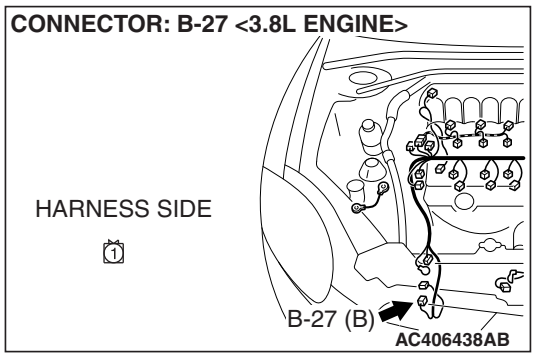
**Q: Is the wiring harness between A/C compressor clutch relay connector B-17X (terminal 1) and the battery in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

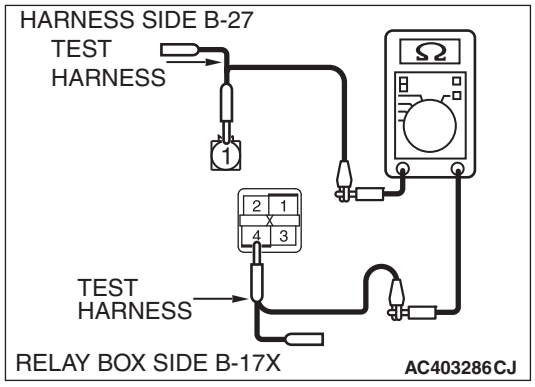



**STEP 20. Check the wiring harness for open circuit.**

(1) Disconnect A/C compressor assembly connector B-27 and A/C compressor clutch relay connector B-17X, and measure the resistance at the wiring harness side.

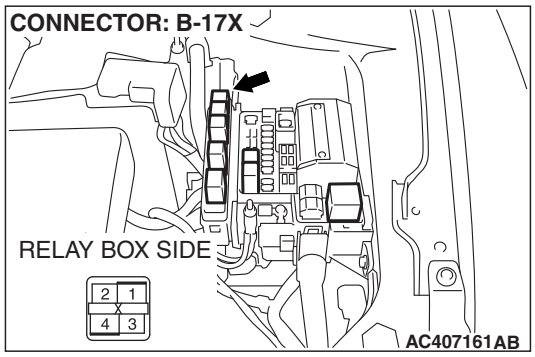


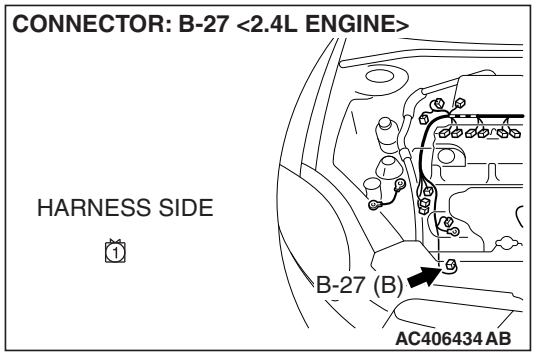

(2) Measure the resistance between A/C compressor assembly connector B-27 terminal 1 and A/C compressor clutch relay connector B-17X terminal 4.

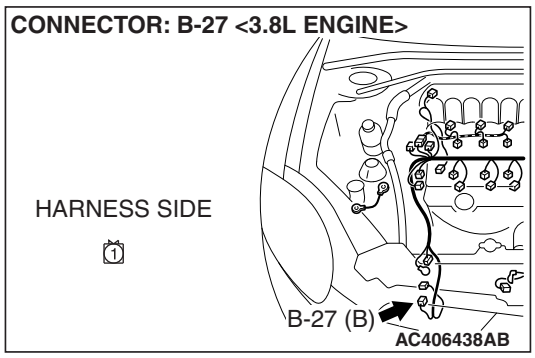
**OK: Less than 2 ohms**

**Q: Is the check result normal?**

**YES :** Go to Step 22.
**NO :** Go to Step 21.




**STEP 21. Check the wiring harness between A/C compressor assembly connector B-27 (terminal 1) and A/C compressor clutch relay connector B-17X (terminal 4).**

**Q: Is the wiring harness between A/C compressor assembly connector B-27 (terminal 1) and A/C compressor clutch relay connector B-17X (terminal 4) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 22. Retest the system.**

Check that the A/C works normally.

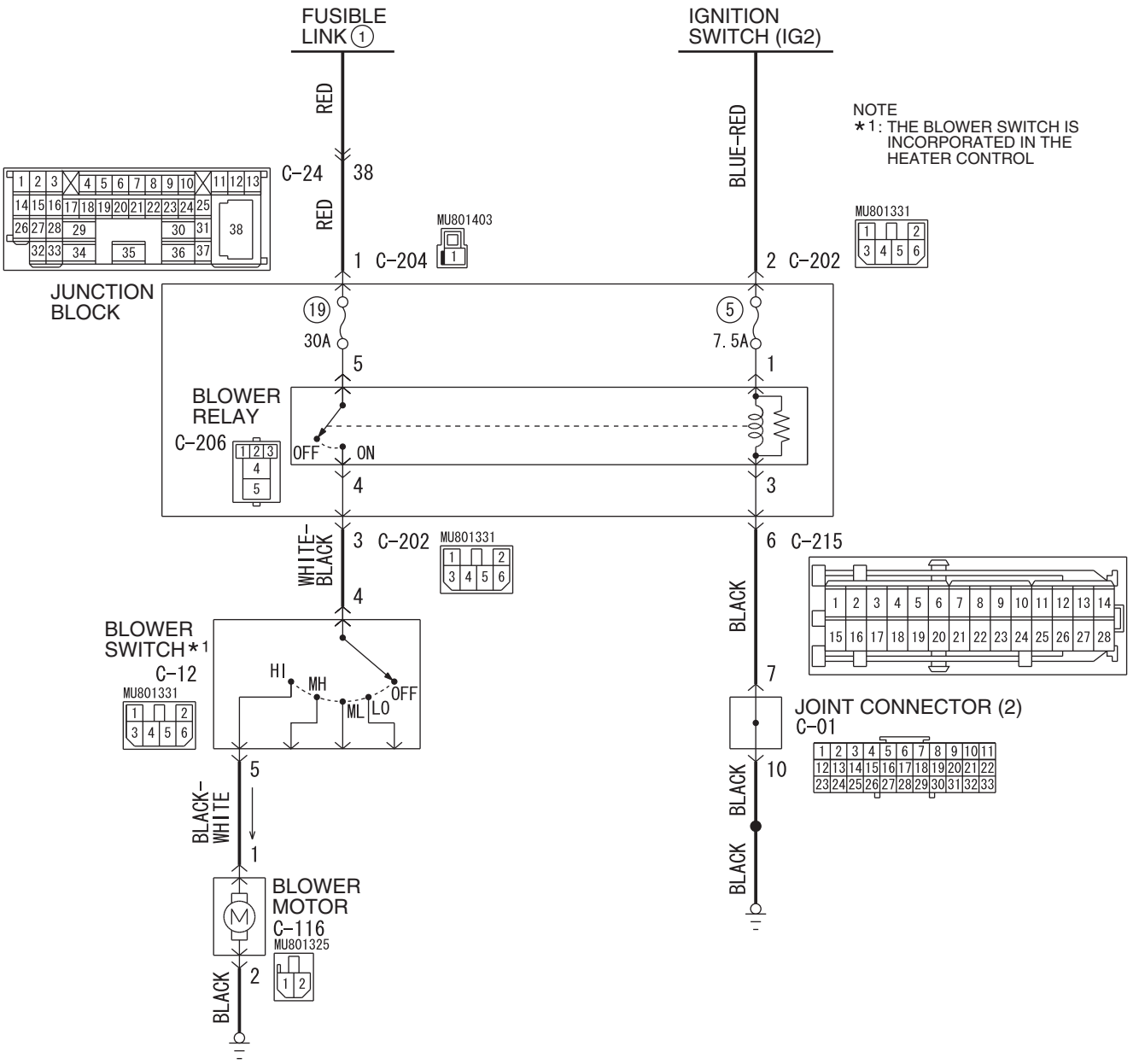
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

## INSPECTION PROCEDURE 4: Blower Fan and Motor do not Turn.

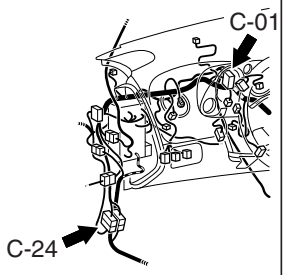
**Blower Motor Circuit**




W6P55M015A

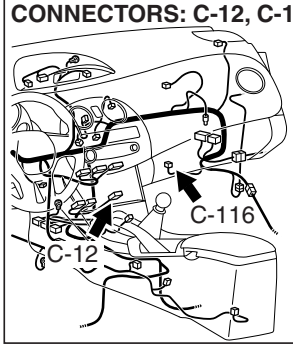
**TSB Revision**

CONNECTORS: C-01, C-24



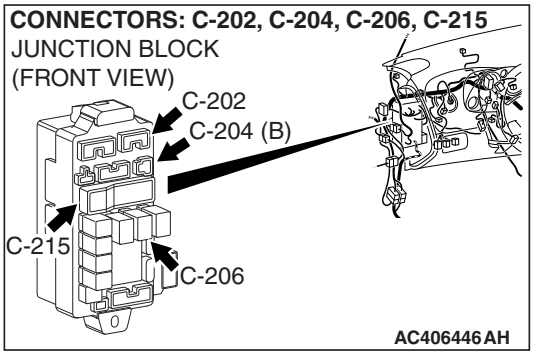

AC406442AS

CONNECTORS: C-12, C-116




AC406444AM

CONNECTORS: C-202, C-204, C-206, C-215




AC406446AH

## FUNCTION

The air from the blower fan is cooled or warmed to control the temperature.

## PROBABLE CAUSES

- Malfunction of the blower relay
- Malfunction of the blower motor
- Malfunction of the blower switch
- Malfunction of the harness.
- Malfunction of connector.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

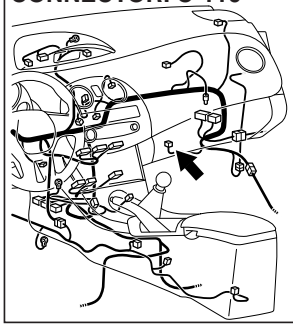
**STEP 1. Check blower motor connector C-116 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is blower motor connector C-116 in good condition?**

**YES :** Go to Step 2.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR: C-116

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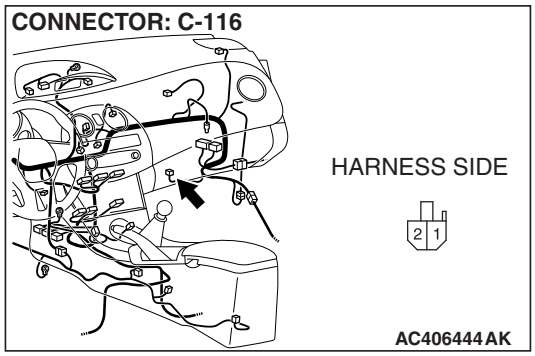
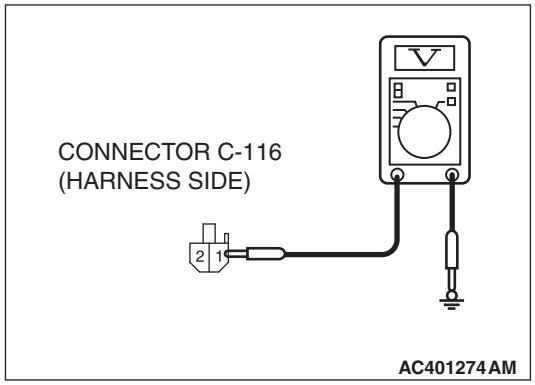
**STEP 2. Measure the voltage at blower motor connector C-116.**




(1) Disconnect blower motor connector C-116, and measure the voltage at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.
(3) Turn the blower speed selection dial to the "4 (HI)" position.

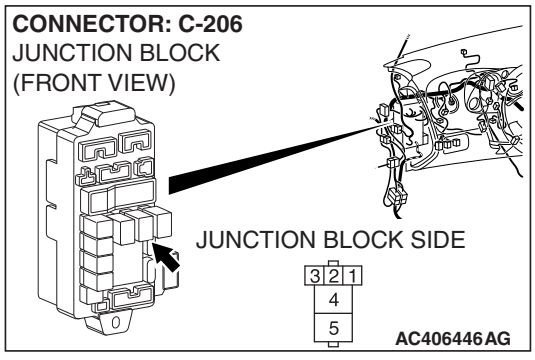



(4) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

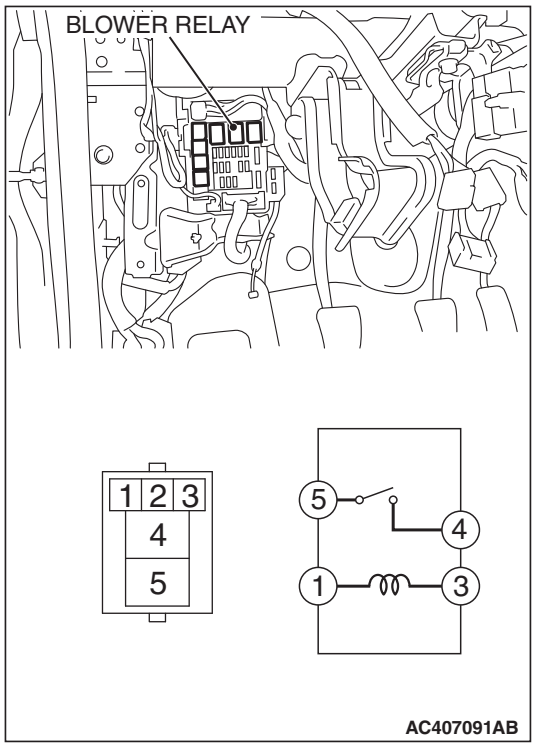
**YES :** Go to Step 15.
**NO :** Go to Step 3.

**STEP 3. Check blower relay connector C-206 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**




**Q: Is blower relay connector C-206 in good condition?**

**YES :** Go to Step 4.
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 4. Check the blower relay continuity.**

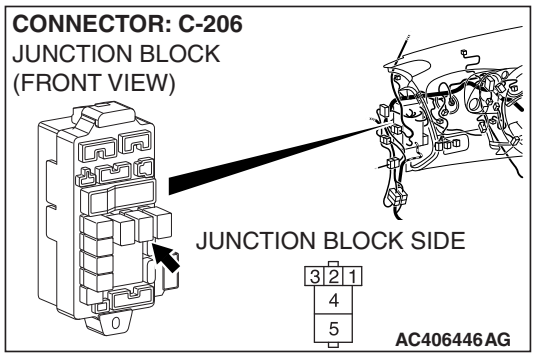
Follow the table below to check the blower relay for continuity.

| Battery voltage | Tester connection | Specified condition |
|---|---|---|
| Not applied | 4 – 5 | Open circuit |
| • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 3 to the negative battery terminal | 4 – 5 | Less than 2 ohms |

**Q: Is the blower relay continuity in good condition?**

**YES :** Go to Step 5.

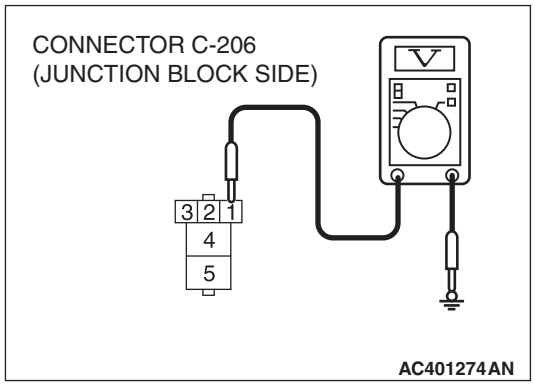
**NO :** Replace the blower relay.




**STEP 5. Measure the voltage at blower relay connector C-206.**

(1) Disconnect blower relay connector C-206, and measure the voltage at the junction block side.

(2) Turn the ignition switch to the "ON" position.




(3) Measure the voltage between terminal 1 and ground.

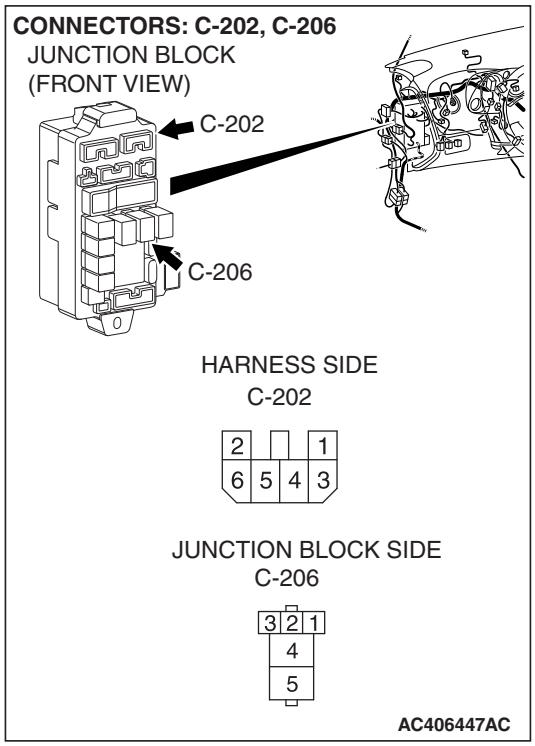
- The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 7.

**NO :** Go to Step 6.

**STEP 6. Check the wiring harness between blower relay connector C-206 (terminal 1) and the ignition switch (IG2).**



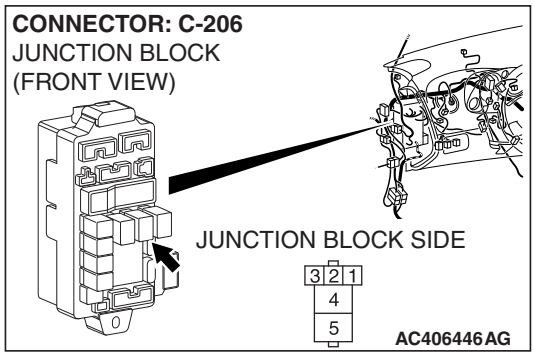

*NOTE: Also check junction block connector C-202 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between blower relay connector C-206 (terminal 1) and the ignition switch (IG2) in good condition?**

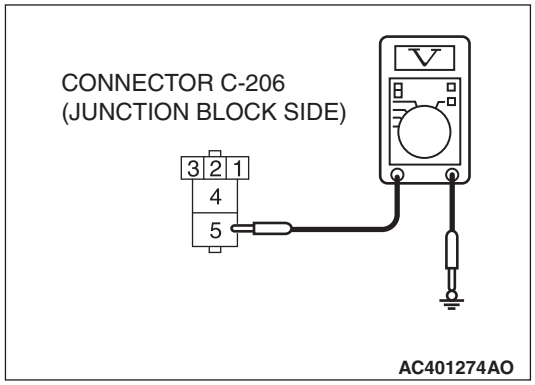
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 7. Measure the voltage at blower relay connector C-206.**




(1) Disconnect blower relay connector C-206, and measure the voltage at the junction block side.

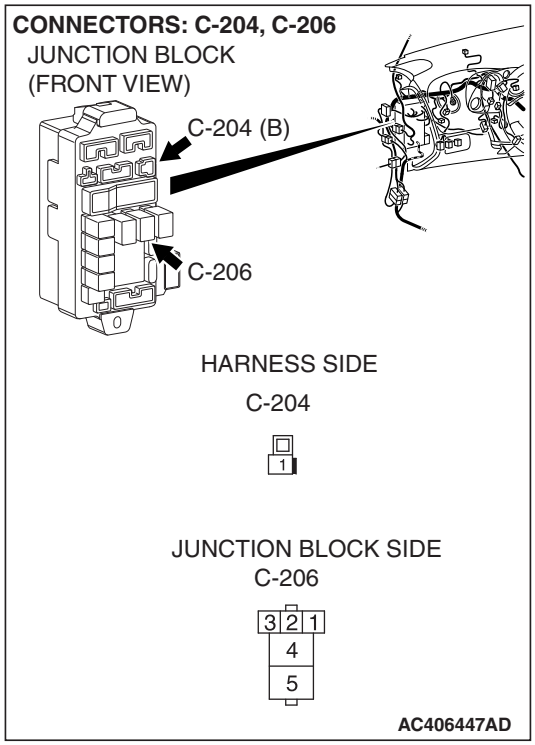


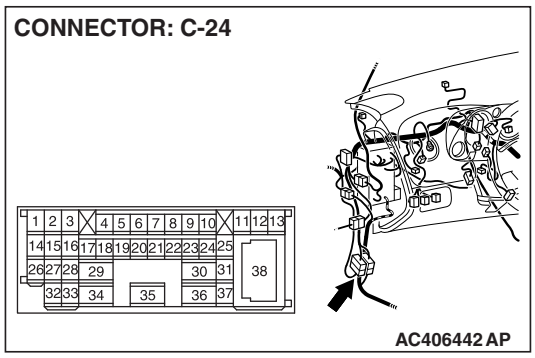

(2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 9.
**NO :** Go to Step 8.

**STEP 8. Check the wiring harness between blower relay connector C-206 (terminal 5) and fusible link (1).**






*NOTE: Also check intermediate connector C-24 and junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24, junction block connector C-204 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

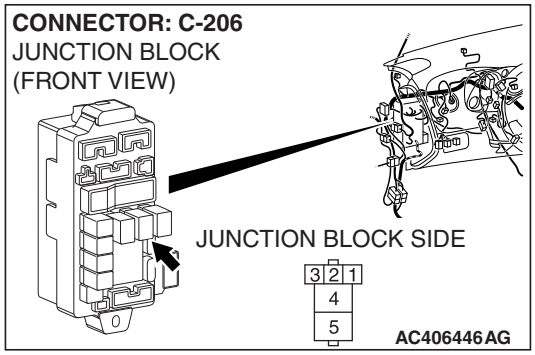
**Q: Is the wiring harness between blower relay connector C-206 (terminal 5) and fusible link (1) in good condition?**

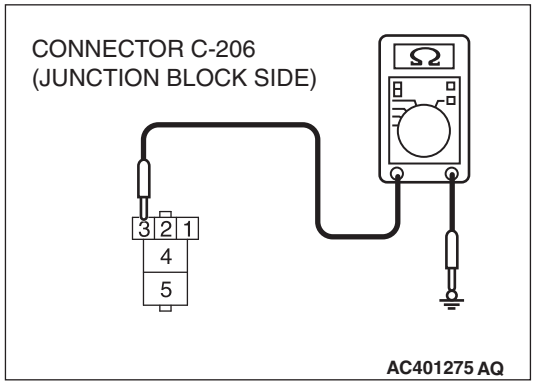
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 9. Measure the resistance at blower relay connector C-206.**

(1) Disconnect blower relay connector C-206, and measure the resistance at the wiring harness side.



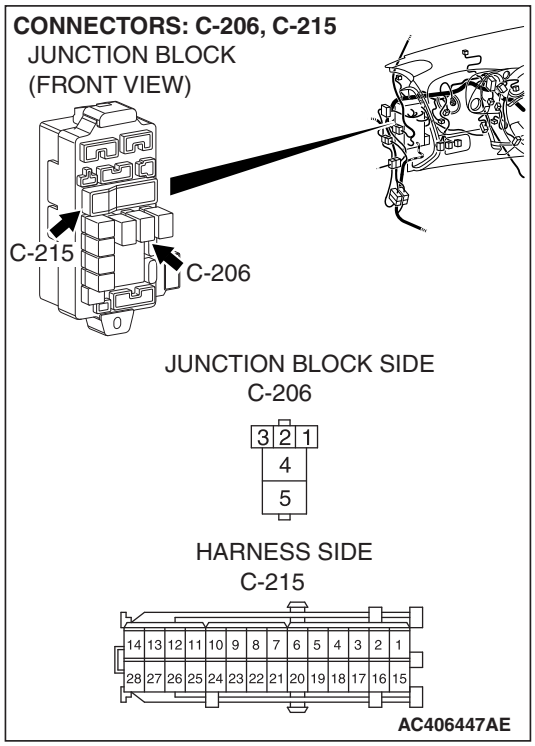

(2) Measure the resistance value between terminal 3 and ground.
- The measured value should be 2 ohms or less.

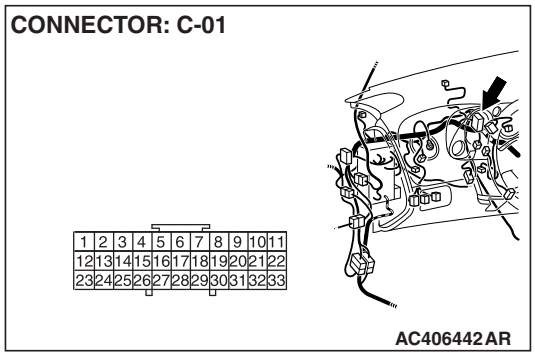
**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 11.

**NO :** Go to Step 10.

**STEP 10. Check the wiring harness between blower relay connector C-206 (terminal 3) and ground.**




*NOTE: Also check junction block connector C-215 and joint connector C-01 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 and joint connector C-01 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between blower relay connector C-206 (terminal 3) and ground in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

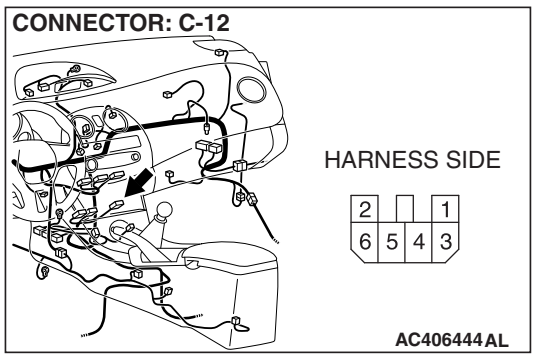
**NO :** Repair the wiring harness.

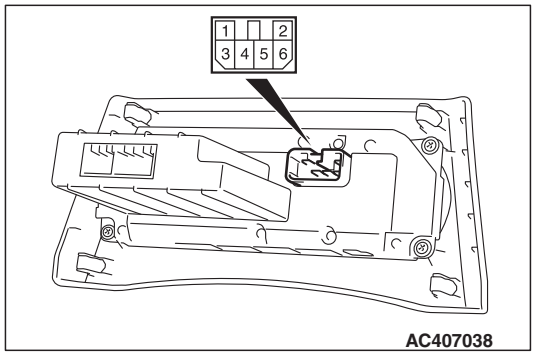
**STEP 11. Check blower switch connector C-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is blower switch connector C-12 in good condition?**

**YES :** Go to Step 12.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.






**STEP 12. Check the blower switch continuity.**

Follow the table below to check the blower switch for continuity.

| Switch position | Tester connection (Connector A) | Specified condition |
|---|---|---|
| 0 (OFF) | 1 – 4, 2– 4, 4 – 5, 4 – 6 | Open circuit |
| 1 (LO) | 1 – 4 | Less than 2 ohms |
| 2 (ML) | 4 – 6 | Less than 2 ohms |
| 3 (MH) | 2 – 4 | Less than 2 ohms |
| 4 (HI) | 4 – 5 | Less than 2 ohms |

**Q: Is the blower switch continuity in good condition?**

**YES :** Go to Step 13.

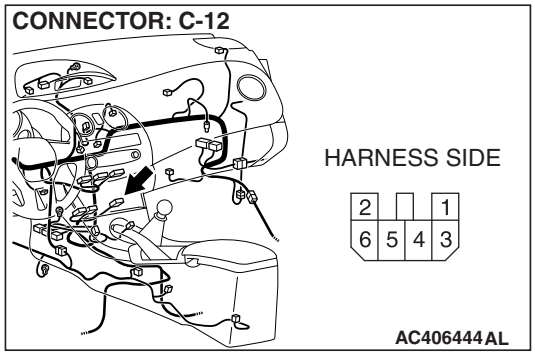
**NO :** Replace the heater control.

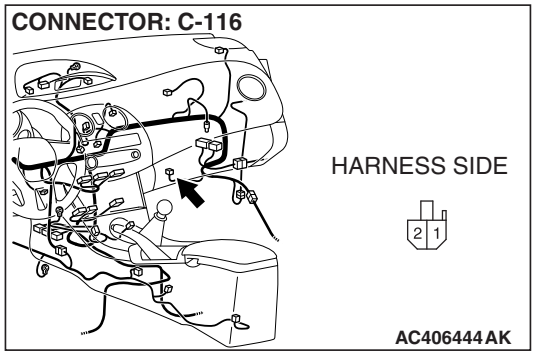
**STEP 13. Check the wiring harness between blower motor connector C-116 (terminal 1) and blower switch connector C-12 (terminal 5).**

**Q: Is the wiring harness between blower motor connector C-116 (terminal 1) and blower relay connector C-12 (terminal 5) in good condition?**

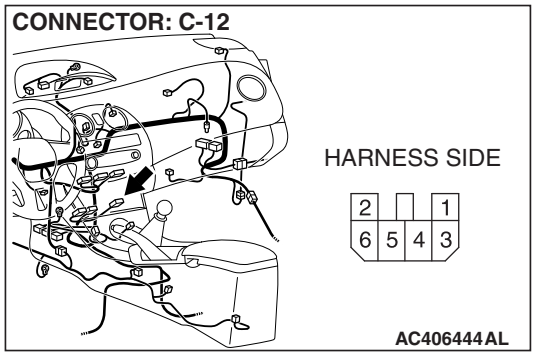
**YES :** Go to Step 14.

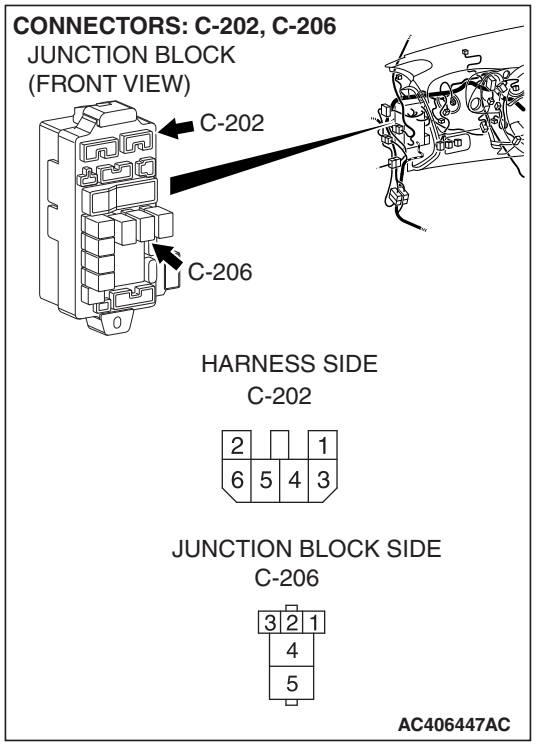
**NO :** Repair the wiring harness.



**STEP 14. Check the wiring harness between blower switch connector C-12 (terminal 4) and blower relay connector C-206 (terminal 4).**



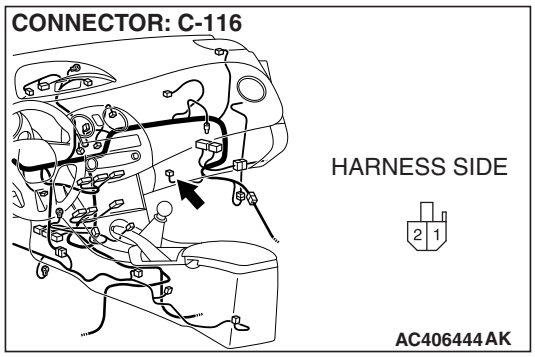

*NOTE: Also check junction block connector C-202 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between blower switch connector C-12 (terminal 4) and blower relay connector C-206 (terminal 4) in good condition?**

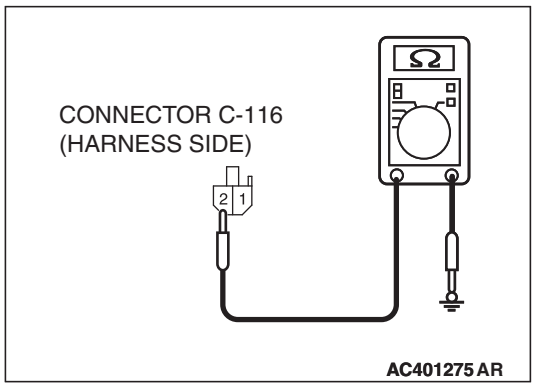
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 15. Measure the resistance at blower motor connector C-116 in order to the ground circuit to the blower motor.**




(1) Disconnect blower motor connector C-116, and measure the resistance at the wiring harness side.



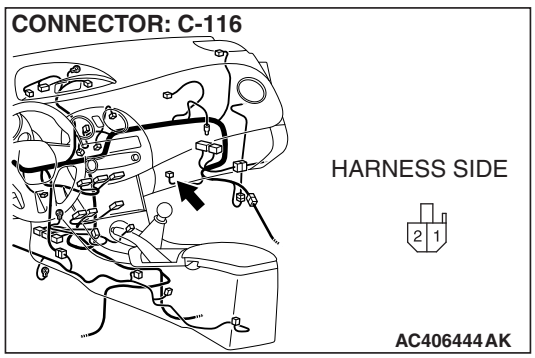

(2) Measure the resistance value between terminal 2 and ground.

**OK: Less than 2 ohms**

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 17.
**NO :** Go to Step 16.

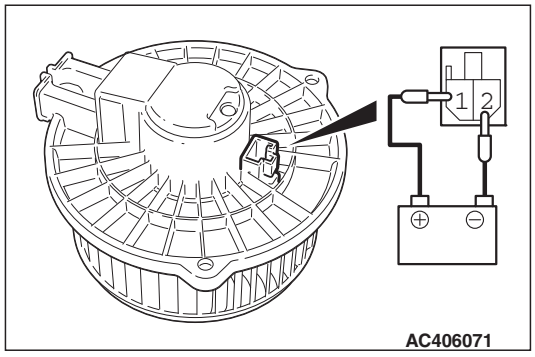
**STEP 16. Check the wiring harness between blower motor connector C-116 (terminal 2) and ground.**




**Q: Is the wiring harness between blower motor connector C-116 (terminal 2) and ground in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 17. Check the blower fan and motor operation.**




When battery voltage is applied between the terminals, check that the motor operates. Also, check that there is no abnormal noise.

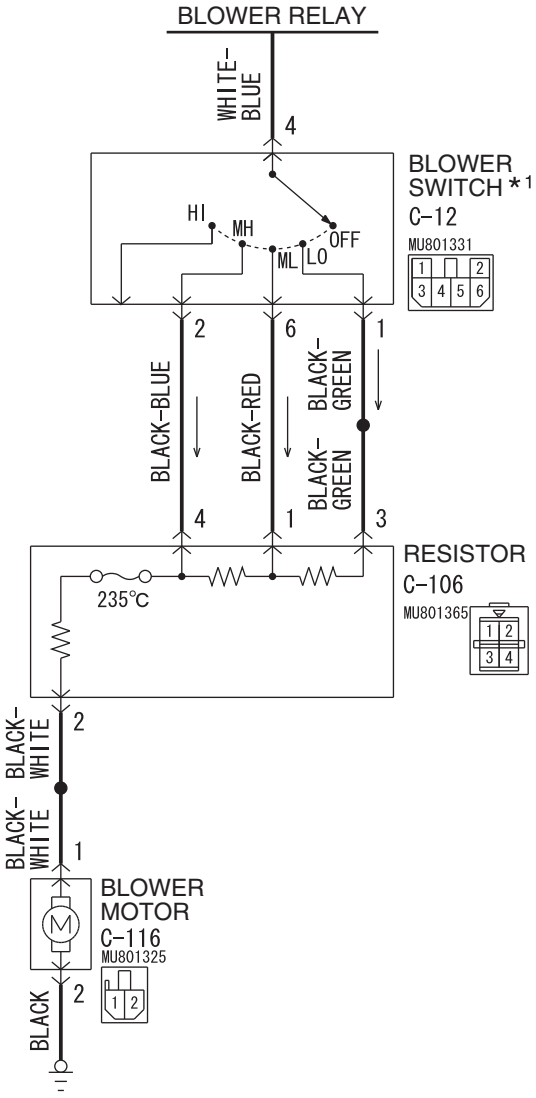
**Q: Is there any abnormal noise?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the blower motor.

**TSB Revision**

## INSPECTION PROCEDURE 5: Blower Air Amount cannot be Changed.

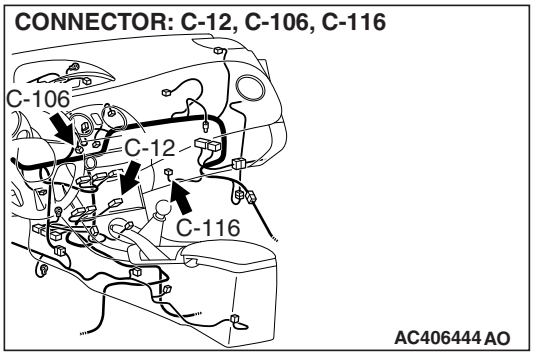
**Blower Switch and Resistor Circuit**




NOTE
*1: THE BLOWER SWITCH IS INCORPORATED IN THE HEATER CONTROL

W6P55M016A

**CONNECTOR: C-12, C-106, C-116**




**TSB Revision**

## FUNCTION

The air from the blower fan is cooled or warmed to control the temperature.

## PROBABLE CAUSES

- Malfunction of the resistor
- Malfunction of the blower switch
- Malfunction of the harness.
- Malfunction of connector.

## DIAGNOSIS

**Required Special Tools:**

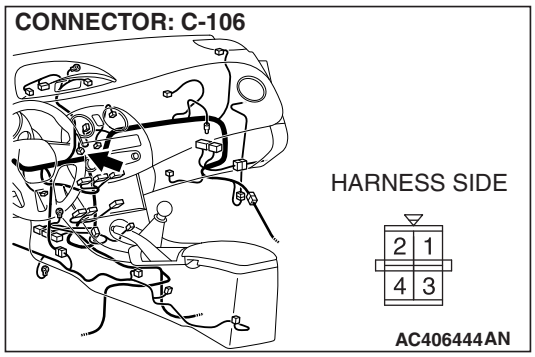
- MB991223: Harness Set
- MB992006: Extra Fine Probe

**STEP 1. Check resistor connector C-106 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is resistor connector C-106 in good condition?**

**YES :** Go to Step 2.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

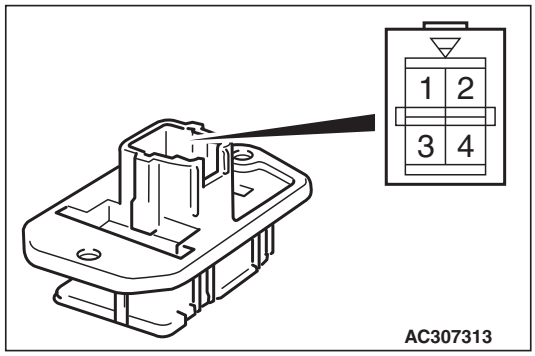



**STEP 2. Check the resistor resistance value.**

Use an ohmmeter to measure the resistance between the terminals. Check that the measured value is at the standard value.

**Standard value:**

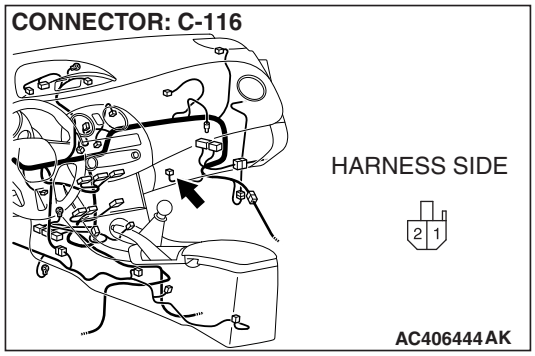
| Measurement terminal | Standard value Ω |
|---|---|
| Between terminals 2 and 3 (LO) | 2.79 |
| Between terminals 1 and 2 (ML) | 1.49 |
| Between terminals 2 and 4 (MH) | 0.39 |




**Q: Is the measured value at the standard value?**

**YES :** Go to Step 3.

**NO :** Replace the resistor.

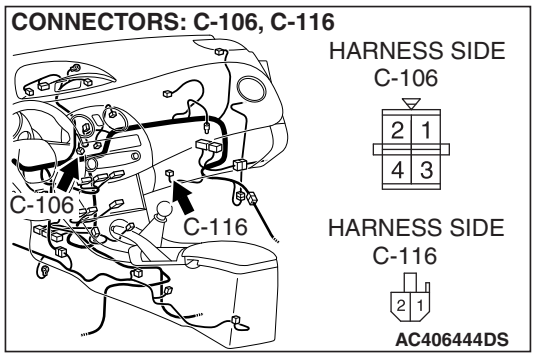



**STEP 3. Check blower motor connector C-116 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is blower motor connector C-116 in good condition?**

**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

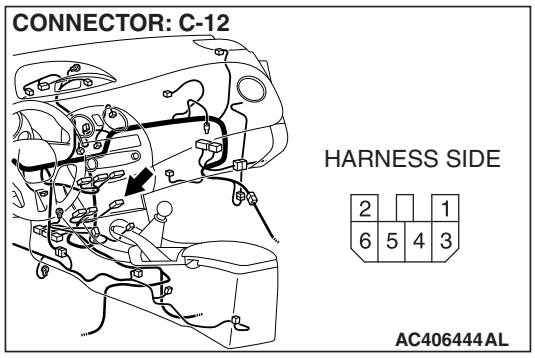



**STEP 4. Check the wiring harness for open circuit blower switch connector C-116 (terminal 1) and resistor connector C-106 (terminal 2).**

**Q: Is the wiring harness between blower switch connector C-116 (terminal 1) and resistor connector C-106 (terminal 2) in good condition?**

**YES :** Go to Step 5.

**NO :** Repair the wiring harness.

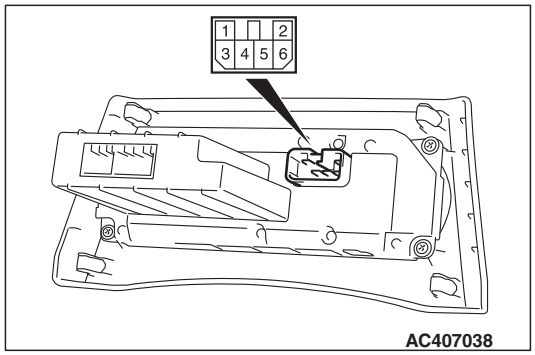



**STEP 5. Check blower switch connector C-12 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is blower switch connector C-12 in good condition?**

**YES :** Go to Step 6.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 6. Check the blower switch continuity.**

Follow the table below to check the blower switch for continuity.

| Switch position | Tester connection (Connector A) | Specified condition |
|---|---|---|
| 0 (OFF) | 1 – 4, 2– 4, 4 – 5, 4 – 6 | Open circuit |
| 1 (LO) | 1 – 4 | Less than 2 ohms |
| 2 (ML) | 4 – 6 | Less than 2 ohms |
| 3 (MH) | 2 – 4 | Less than 2 ohms |
| 4 (HI) | 4 – 5 | Less than 2 ohms |

**Q: Is the blower switch continuity in good condition?**

**YES :** Go to Step 7.

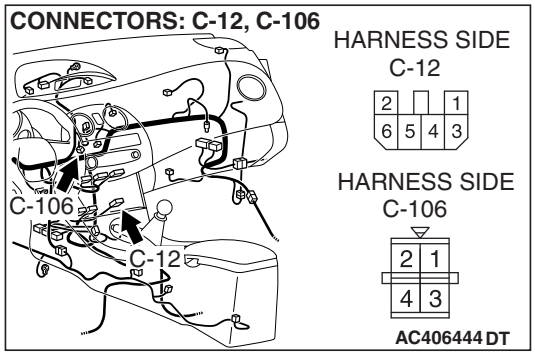
**NO :** Replace the heater control.

**STEP 7. Check the wiring harness for open circuit blower switch connector C-12 (terminals 1, 6 and 2) and resistor connector C-106 (terminals 3, 1 and 4).**

**Q: Are the wiring harness between blower switch connector C-12 (terminals 1, 6 and 2) and resistor connector C-106 (terminals 3, 1 and 4) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.



**INSPECTION PROCEDURE 6: When the A/C is Operating, Temperature Inside the Passenger Compartment does not Decrease (Cool Air is not Emitted).**

## PROBABLE CAUSES

- Improper amount of refrigerant
- Malfunction of the A/C-ECU

## DIAGNOSIS

**Required Special Tools:**

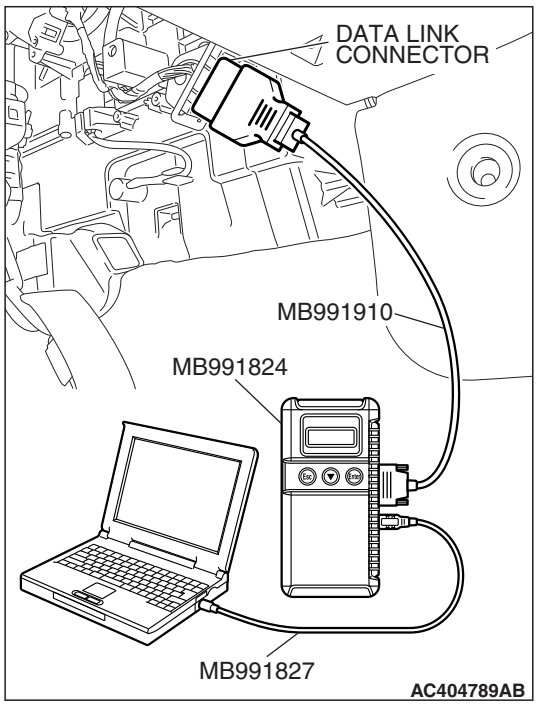
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**STEP 1. Using scan tool MB991958, read the diagnostic trouble code.**

Check if an A/C-ECU DTC is set.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Refer to Diagnostic Trouble Code Chart P.55A-9.
**NO :** Go to Step 2.




**STEP 2. Using scan tool MB991958 read the ECM <M/T> or PCM <A/T> diagnostic trouble code.**

Check whether an engine and automatic transaxle DTCs are set or not.
(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and automatic transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 3.
**NO :** Diagnose the ECM <M/T> or PCM <A/T> (Refer to GROUP 13A, Diagnostic Trouble Code P.13A-41 <2.4L ENGINE> or GROUP 13B, Diagnostic Trouble Code P.13B-43 <3.8L ENGINE>).

**STEP 3. Using scan tool MB991958, check actuator test.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
- Item 77: Condenser fan: 0%
- Item 78: Condenser fan: 100%
- Item 79: Condenser fan: 50%
  - Check that the condenser motor operates.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the motor operate normally?**

**YES :** Go to Step 4.
**NO :** Refer to Inspection procedure 8, "The condenser fan and the radiator fan do not operate P.55B-161."

**STEP 4. Check the A/C compressor operation.**

Does the A/C compressor operate?

**Q: Is the check result satisfactory?**

**YES :** Go to Step 5.
**NO :** Refer to Inspection procedure 3, "The compressor dose not work P.55A-113."

**STEP 5. Using scan tool MB991958, check actuator test.**

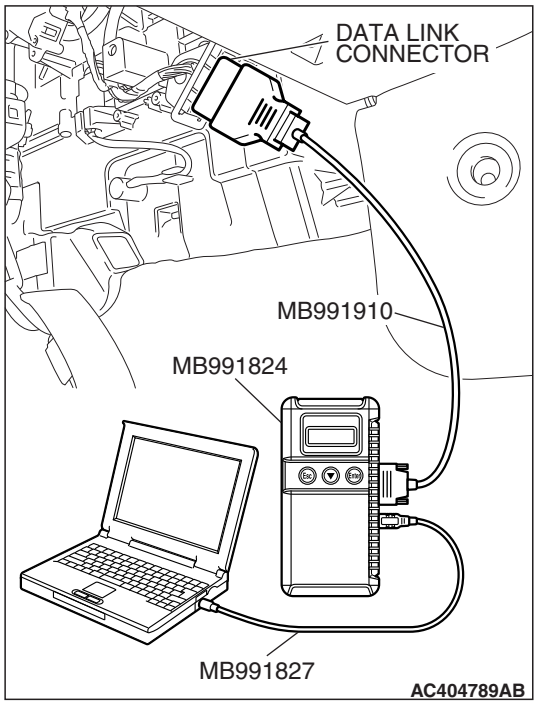
**⚠ CAUTION**
**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
Item 42: air mix damper motor 0% (MAX COOL position)
Item 43: air mix damper motor 100% (MAX HOT position)
Item 44: air mix damper motor 50% (middle position)
- Check that the air mixing damper control motor operates.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the motor operate normally?**

**YES :** Go to Step 7.
**NO :** Go to Step 6.



**STEP 6. Retest the system.**
Check the trouble symptom again.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

**STEP 7. Check the refrigerant level.**
Refer to P.55A-182.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 8.

**NO :** Replenish the refrigerant.

**STEP 8. Retest the system.**
Check the trouble symptom again.

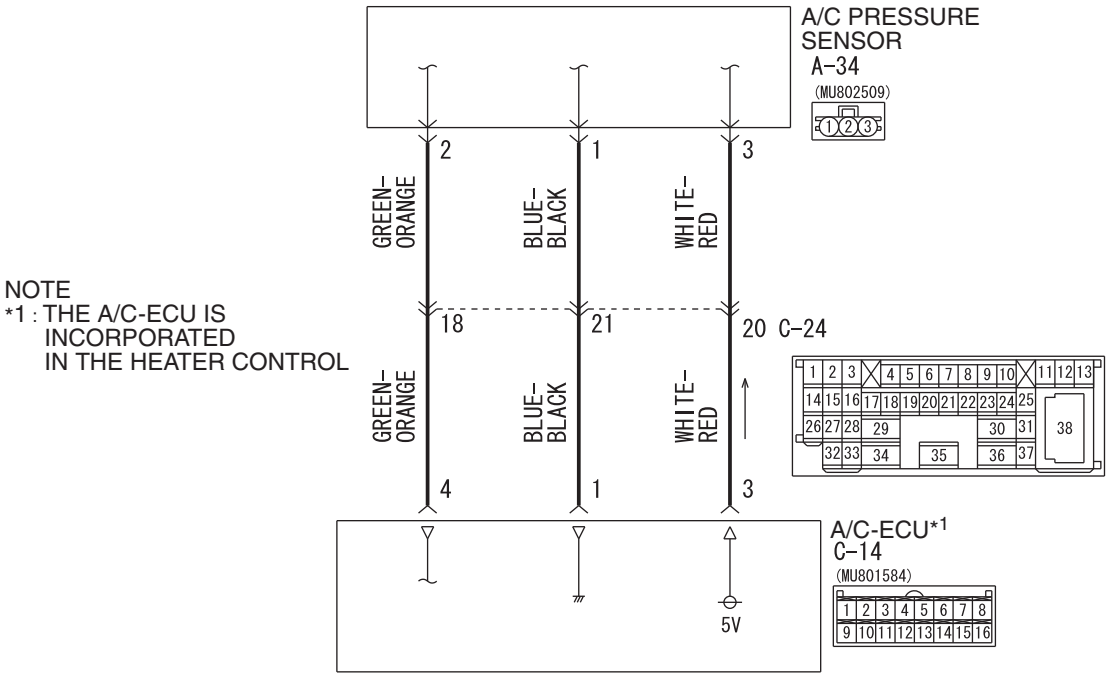
**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

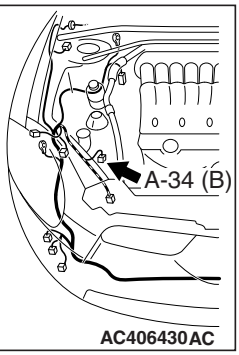
## INSPECTION PROCEDURE 7: The condenser fan and the radiator fan turn at full speed.

**A/C Pressure Sensor Circuit**



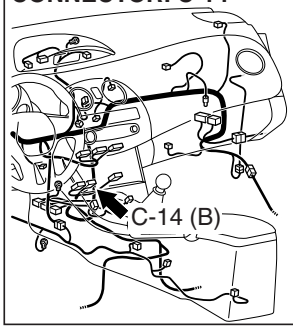

W6P55M018A

**CONNECTOR: A-34**



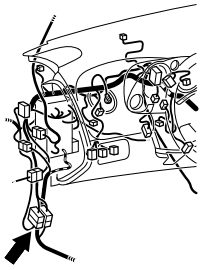

AC406430AC

**CONNECTOR: C-14**




AC406444AD

**CONNECTOR: C-24**



AC406442AQ

**TSB Revision**

## FUNCTION

The condenser turns the high-temperature and high-pressure refrigerant into liquid by cooling it down with fresh air, and it is cooled down by the air from the condenser fan.

## PROBABLE CAUSES

- Malfunction of connector.
- Malfunction of the harness (Pressure sensor circuit is open)
- Malfunction of the A/C pressure sensor.
- Malfunction of the condenser fan motor.
- Malfunction of the A/C-ECU.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (M.U.T.-III Sub Assembly)
  - MB991824: V.C.I.
  - MB991827: M.U.T.-III USB Cable
  - MB991910: M.U.T.-III Main Harness A

**STEP 1. Using scan tool MB991958, diagnose the CAN bus line.**

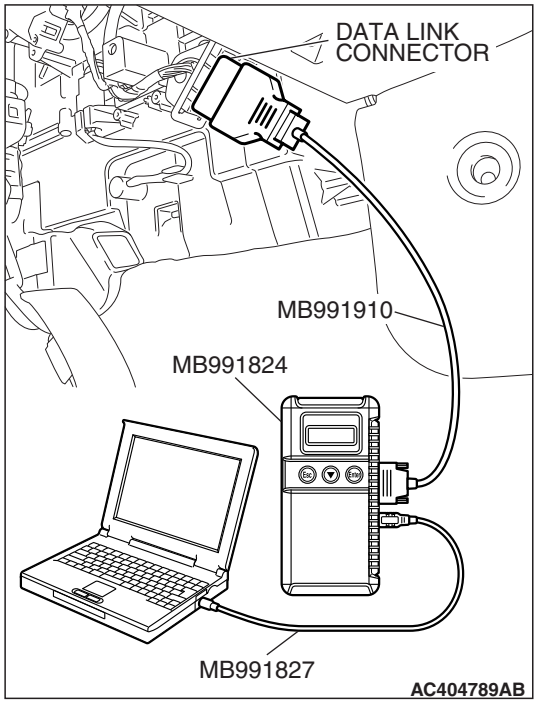
**⚠ CAUTION**

**To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Diagnose the CAN bus line.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the CAN bus line found to be normal?**

**YES :** Go to Step 2.
**NO :** Repair the CAN bus line (Refer to GROUP 54C, Diagnosis P.54C-17).




**STEP 2. Using scan tool MB991958, read the diagnostic trouble code.**

Check if an A/C-ECU DTC is set.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Refer to Diagnostic Trouble Code Chart P.55A-9.
**NO :** Go to Step 3.

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**STEP 3. Using scan tool MB991958 read the ECM <M/T> or PCM <A/T> diagnostic trouble code.**

Check whether an engine and automatic transaxle DTCs are set or not.

(1) Turn the ignition switch to the "ON" position.
(2) Check for engine and automatic transaxle DTCs.
(3) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Is the check result satisfactory?**

**YES :** Go to Step 4.
**NO :** Diagnose the ECM <M/T> or PCM <A/T> (Refer to GROUP 13B, Diagnostic Trouble Code P.13B-43 <3.8L ENGINE>).

**STEP 4. Using scan tool MB991958, check actuator test.**

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
- Item 77: Condenser fan: 0%
- Item 78: Condenser fan: 100%
- Item 79: Condenser fan: 50%
  - Check that the condenser fan motor operates.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

**Q: Does the motor operate normally?**

**YES :** Go to Step 5.
**NO :** Go to Step 6.

**STEP 5. Retest the system.**

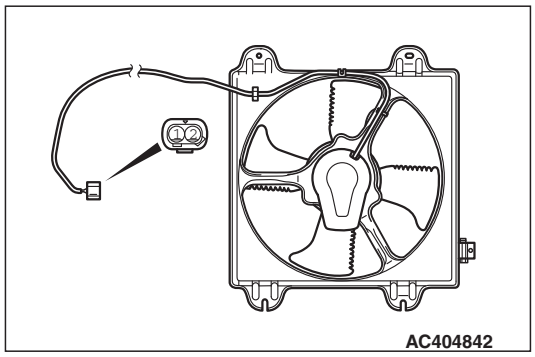
Check the trouble symptom again.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Replace the heater control.

**STEP 6. Check the condenser fan motor operation.**

When battery voltage is applied between the terminals, check that the motor operates. Also, check that there is no abnormal noise.




**Q: Is there any abnormal noise?**

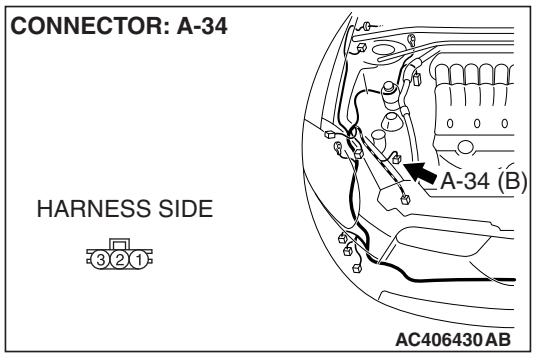
**YES :** Go to Step 7.
**NO :** Diagnose the ECM <M/T> or PCM <A/T> (Refer to GROUP 13B, Diagnostic Trouble Code P.13B-43 <3.8L ENGINE>).

**STEP 7. Check A/C pressure sensor connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C pressure sensor connector A-34 in good condition?**

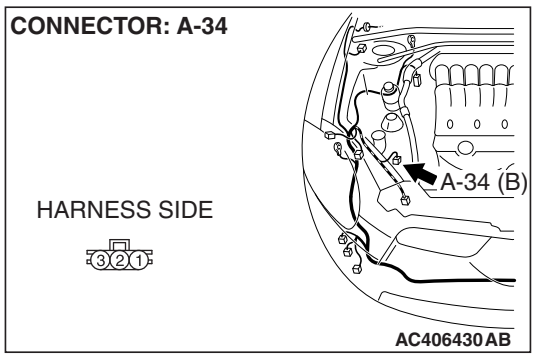
**YES :** Go to Step 8.

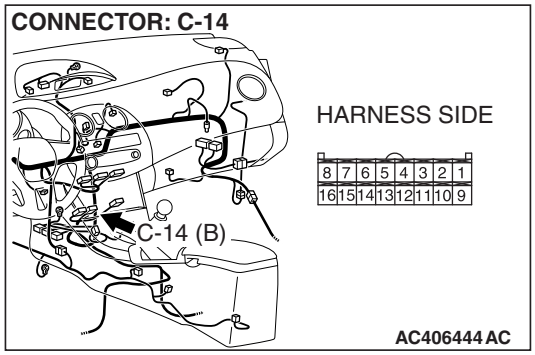
**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 8. Check the wiring harness for open circuit.**

(1) Disconnect A/C-ECU connector C-14 and A/C pressure sensor connector A-34, and measure the resistance at the wiring harness side.



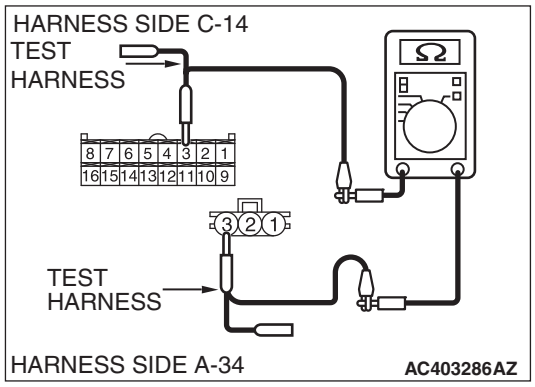

(2) Measure the resistance between A/C-ECU connector C-14 terminal 3 and A/C pressure sensor connector A-34 terminal 3.

**OK: Less than 2 ohms**

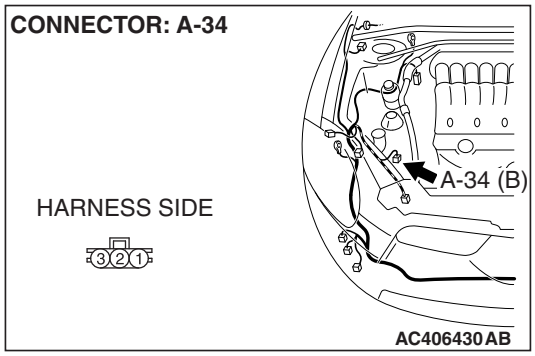
**Q: Is the check result normal?**

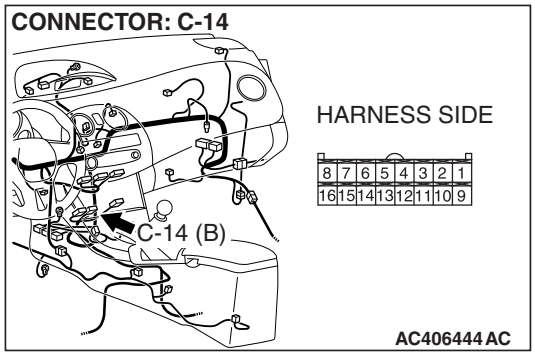
**YES :** Go to Step 10.

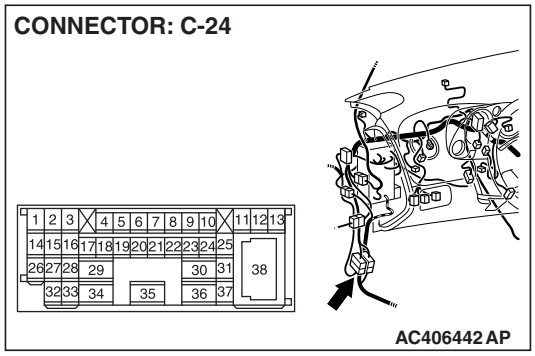
**NO :** Go to Step 9.



**STEP 9. Check the wiring harness between A/C-ECU connector C-14 (terminal 3) and A/C pressure sensor connector A-34 (terminal 3).**




*NOTE: Also check intermediate connector C-24 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector C-14 (terminal 3) and A/C pressure sensor connector A-34 (terminal 3) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 10. Retest the system.**

Check that the condenser works normally.

**Q: Is the check result satisfactory?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Replace the heater control.

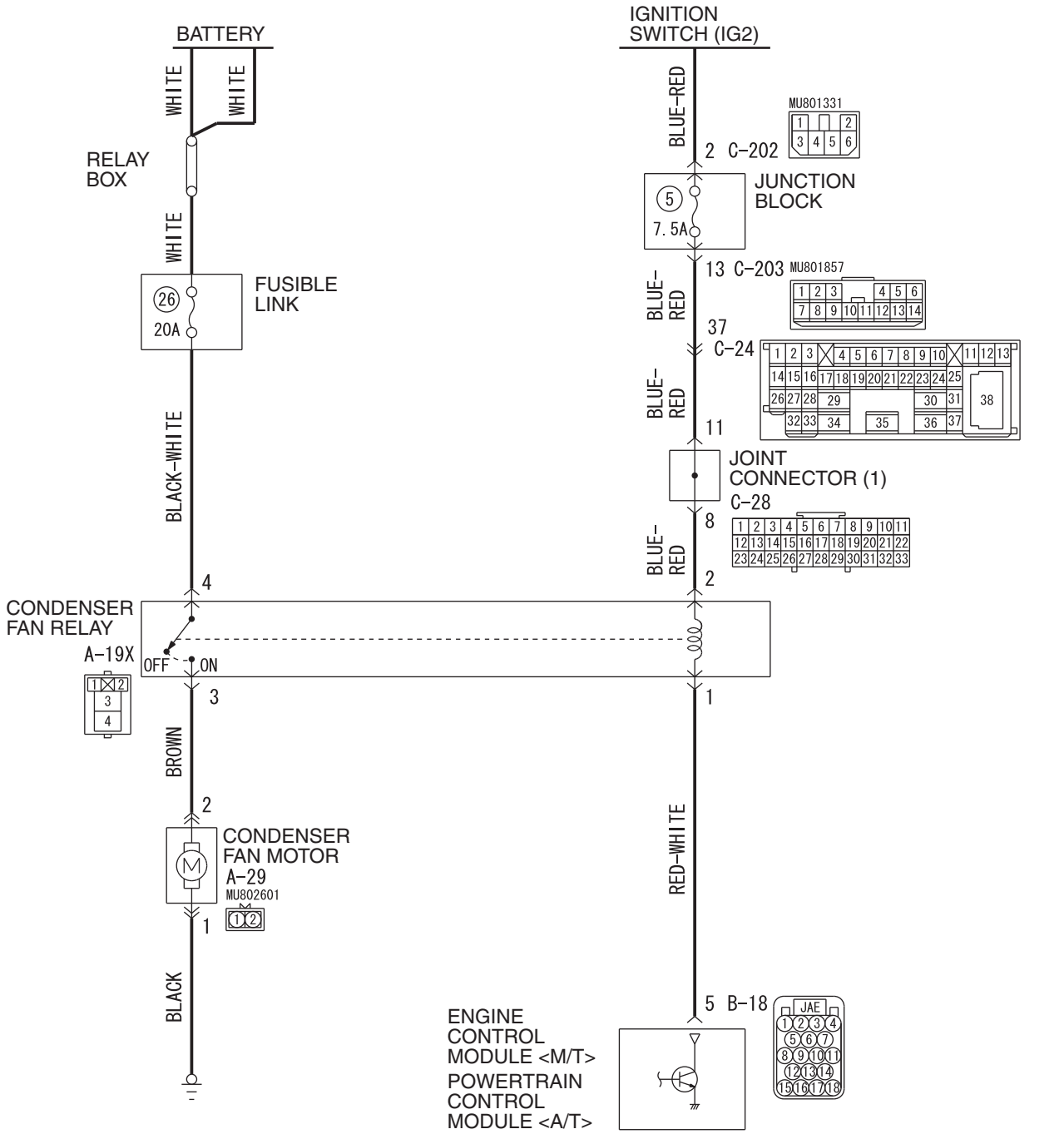
## INSPECTION PROCEDURE 8: The condenser fan and the radiator fan do not operate.

### DIAGNOSIS

Refer to GROUP 14, Symptom Chart P.14-4.

## INSPECTION PROCEDURE 9: Condenser Fan does not Operate.

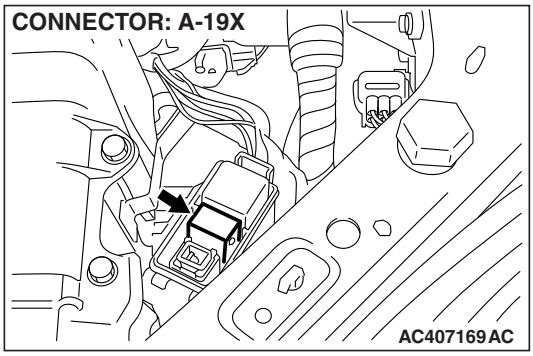
**Condenser Fan Motor**




WAP55M002A

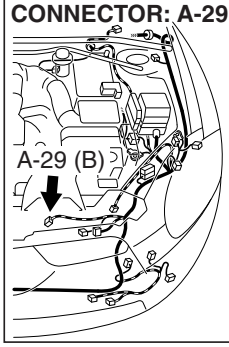
**TSB Revision**

CONNECTOR: A-19X



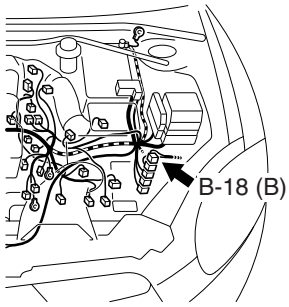
AC407169AC

CONNECTOR: A-29



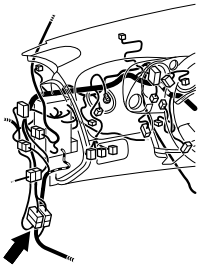

AC406432AX

CONNECTOR: B-18



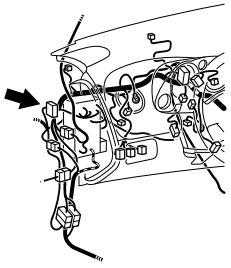

AC406440AI

CONNECTOR: C-24



AC406442AQ

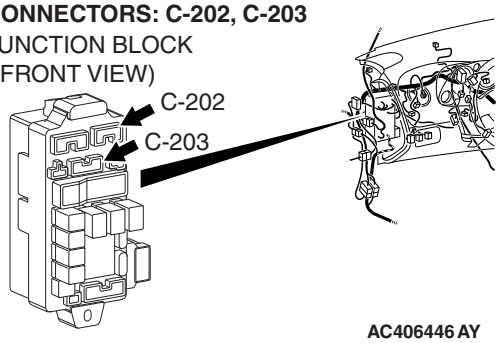
CONNECTOR: C-28



AC406442CR

CONNECTORS: C-202, C-203

JUNCTION BLOCK
(FRONT VIEW)




AC406446AY

## FUNCTION

The condenser turns the high-temperature and high-pressure refrigerant into liquid by cooling it down with fresh air, and it is cooled down by the air from the condenser fan.

## PROBABLE CAUSES

- Malfunction of the condenser fan relay
- Malfunction of the condenser fan motor
- Malfunction of the ECM <M/T> or PCM <A/T>
- Malfunction of the harness.
- Malfunction of connector.

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

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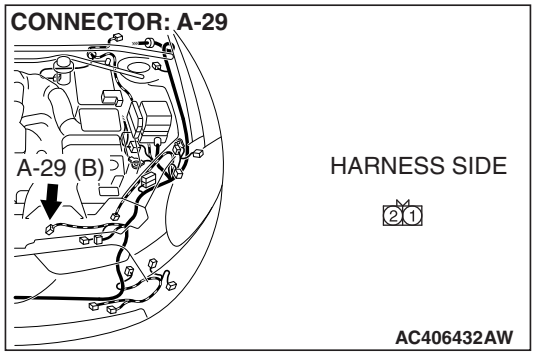
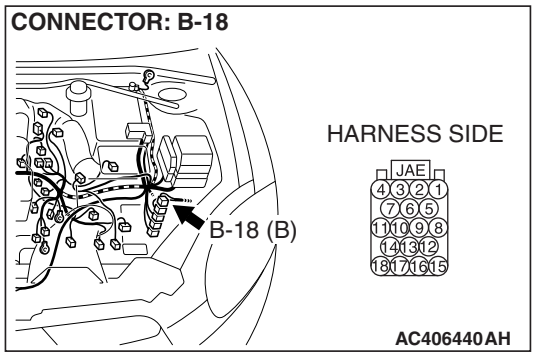


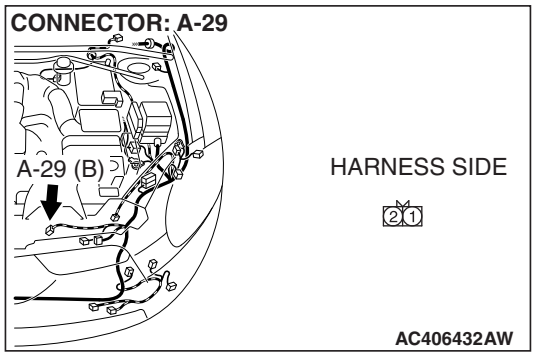

**STEP 1. Check condenser fan motor connector A-29 and ECM <M/T> or PCM <A/T> connector B-18 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is condenser fan motor connector A-29 and ECM <M/T> or PCM <A/T> connector B-18 in good condition?**

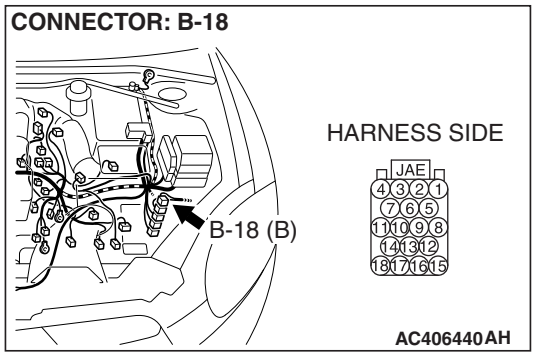
**YES :** Go to Step 2.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

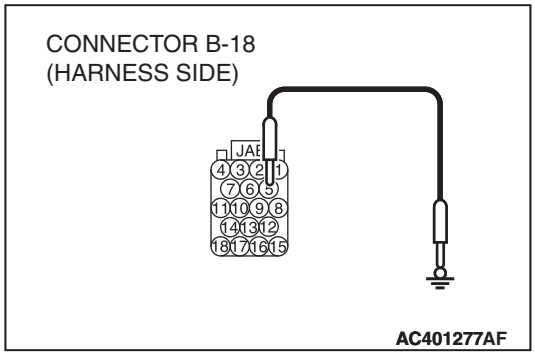
**STEP 2. Measure the voltage at condenser fan motor connector A-29.**

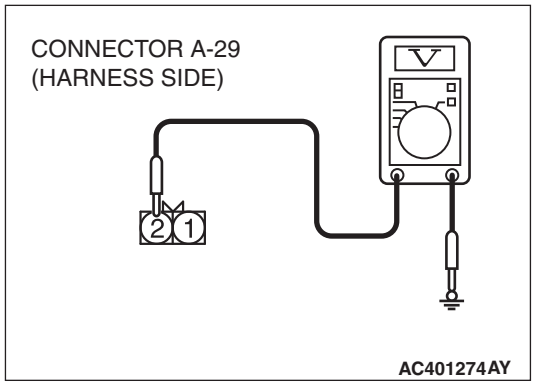



(1) Disconnect condenser fan motor connector A-29, and measure the voltage at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.




(3) Disconnect ECM <M/T> or PCM <A/T> connector B-18 and ground harness side terminal No.5.

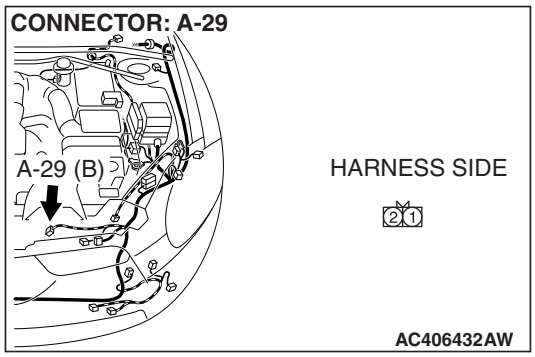



(4) Measure the voltage between terminal 2 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 11.
**NO :** Go to Step 3.

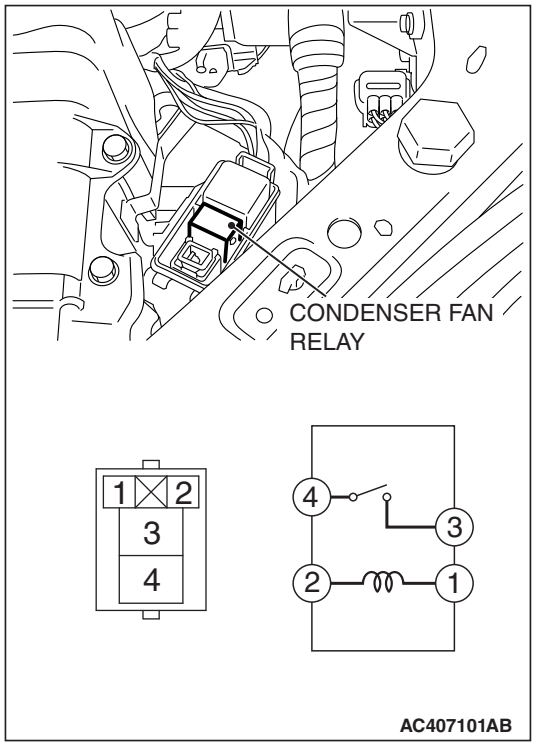



**STEP 3. Check condenser fan motor connector A-29 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is condenser fan motor connector A-29 in good condition?**

**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 4. Check the condenser fan relay continuity.**

Follow the table below to check the condenser fan relay for continuity.

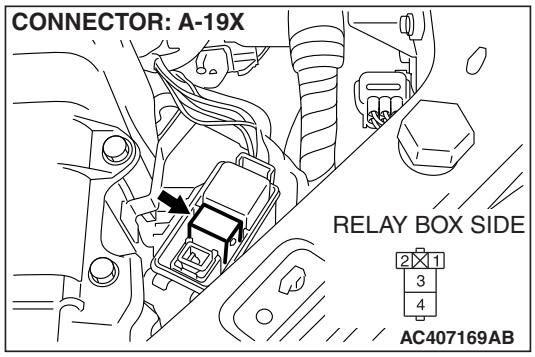
| Battery voltage | Tester connection | Specified condition |
|---|---|---|
| Not applied | 3 – 4 | Open circuit |
| • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | 3 – 4 | Less than 2 ohms |

**Q: Is the blower relay continuity in good condition?**

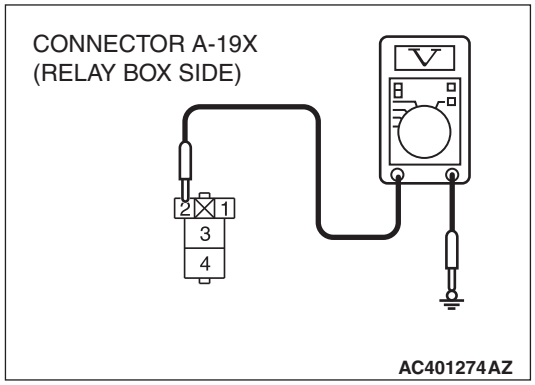
**YES :** Go to Step 5.

**NO :** Replace the condenser fan relay.

**STEP 5. Measure the voltage at condenser fan relay connector A-19X.**




(1) Disconnect condenser fan relay connector A-19X, and measure the voltage at the relay box side.
(2) Turn the ignition switch to the "ON" position.

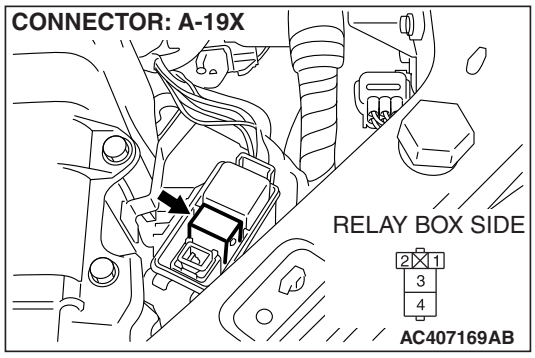



(3) Measure the voltage between terminal 2 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

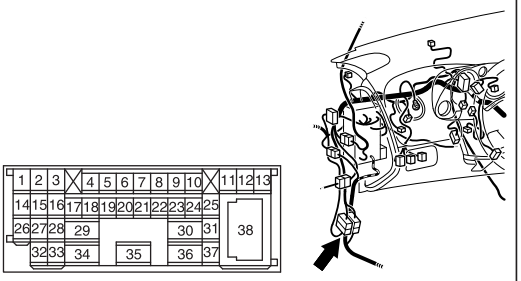
**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 7.
**NO :** Go to Step 6.

**STEP 6. Check the wiring harness between condenser fan relay connector A-19X (terminal 2) and the ignition switch (IG2).**

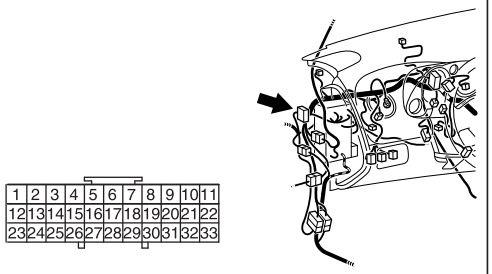


**CONNECTOR: C-24**



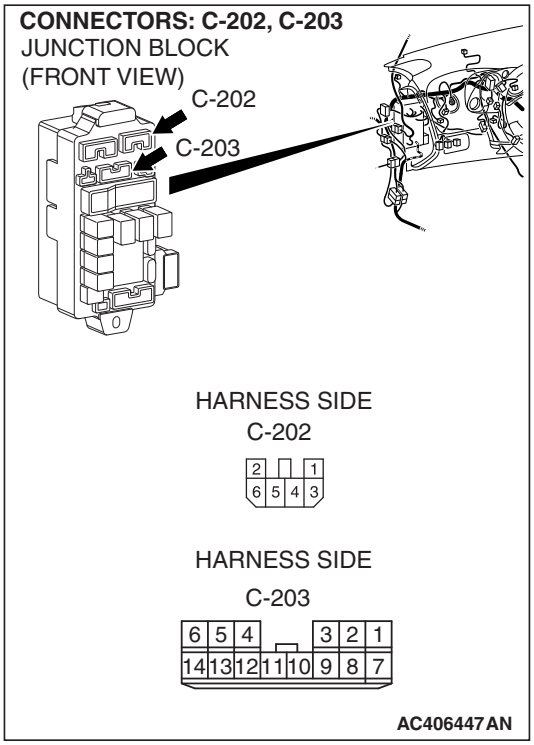

AC406442 AP

**CONNECTOR: C-28**




AC406442 AW

**CONNECTORS: C-202, C-203**




AC406447 AN

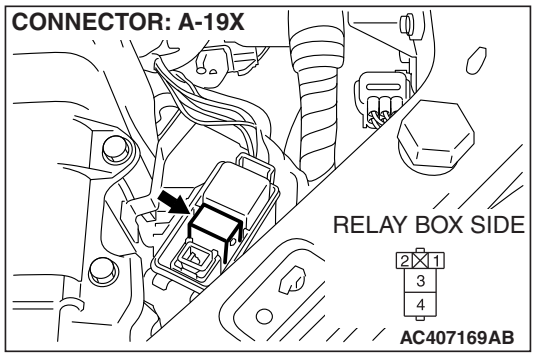
*NOTE: Also check junction block connector C-202, C-203, intermediate connector C-24 and joint connector (1) C-28 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202, C-203, intermediate connector C-24 and joint connector (1) C-28 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between blower relay condenser fan relay connector A-19X (terminal 2) and the ignition switch (IG2) in good condition?**

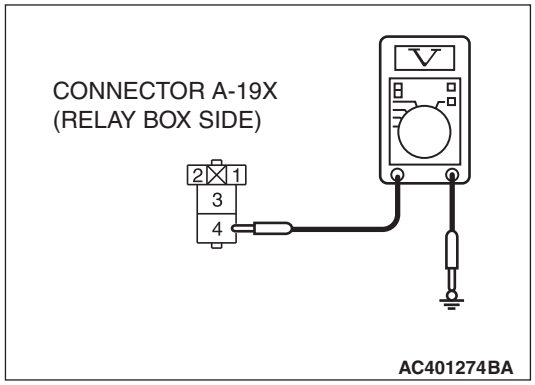
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 7. Measure the voltage at condenser fan relay connector A-19X.**




(1) Disconnect condenser fan relay connector A-19X, and measure the voltage at the junction block side.

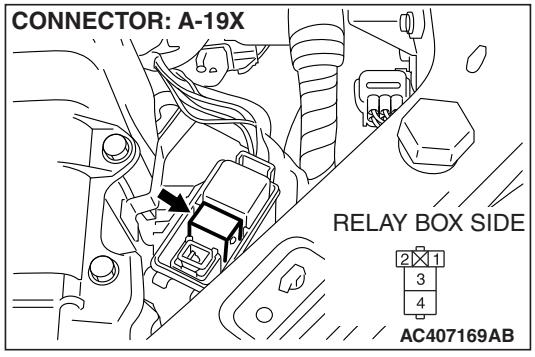



(2) Measure the voltage between terminal 4 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

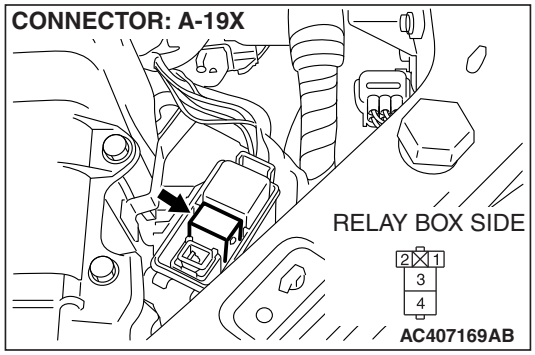
**YES :** Go to Step 9.
**NO :** Go to Step 8.

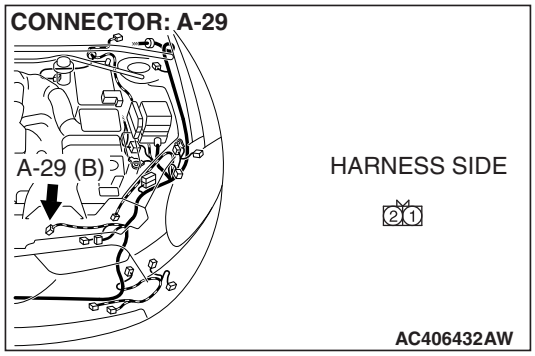
**STEP 8. Check the wiring harness between condenser fan relay connector A-19X (terminal 4) and the battery.**




**Q: Is the wiring harness between condenser fan relay connector A-19X (terminal 4) and the battery in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.



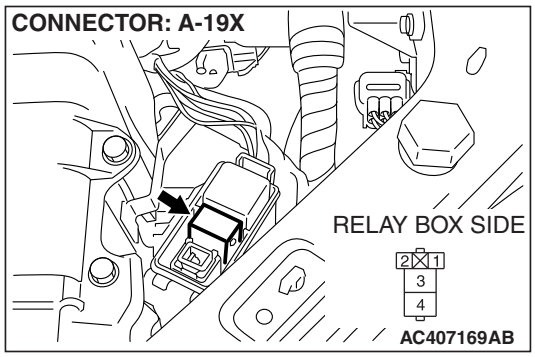



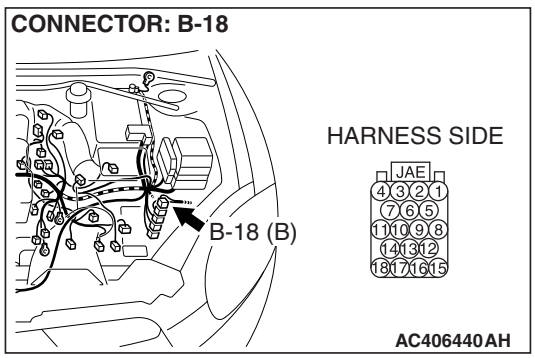

**STEP 9. Check the wiring harness for open circuit between condenser fan relay connector A-19X (terminal 3) and condenser fan motor connector A-29 (terminal 2).**

**Q: Is the wiring harness between condenser fan relay connector A-19X (terminal 3) and condenser fan motor connector A-29 (terminal 2) in good condition?**

**YES :** Go to Step 10.

**NO :** Repair the wiring harness.



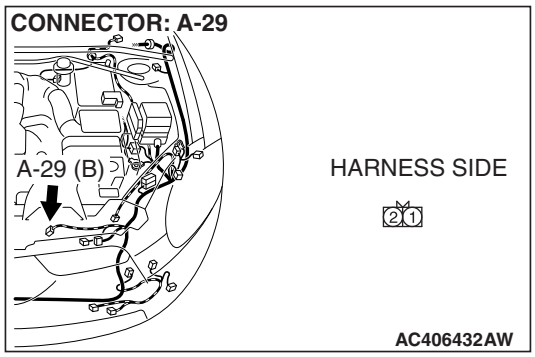

**STEP 10. Check the wiring harness for open circuit between condenser fan relay connector A-19X (terminal 1) and ECM <M/T> or PCM <A/T> B-18 (terminal 5).**

**Q: Is the wiring harness between condenser fan relay connector A-19X (terminal 1) and ECM <M/T> or PCM <A/T> B-18 (terminal 5) in good condition?**

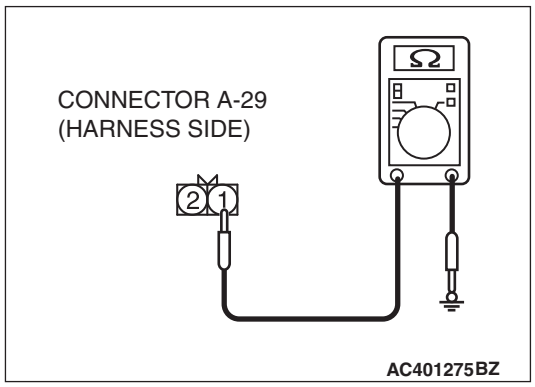
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair the wiring harness.

**STEP 11. Measure the resistance at condenser fan motor connector A-29 in order to the ground circuit to the blower motor.**




(1) Disconnect condenser fan motor connector A-29, and measure the resistance at the wiring harness side.

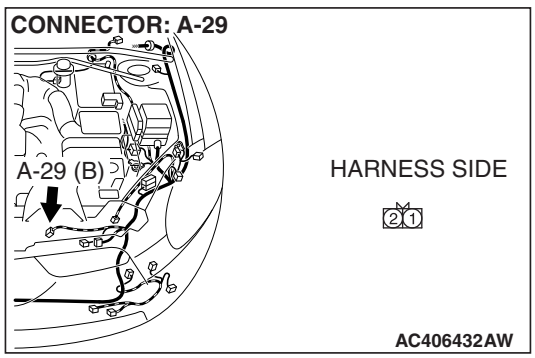



(2) Measure the resistance value between terminal 1 and ground.
- The measured value should be 2 ohms or less.

**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 13.
**NO :** Go to Step 12.

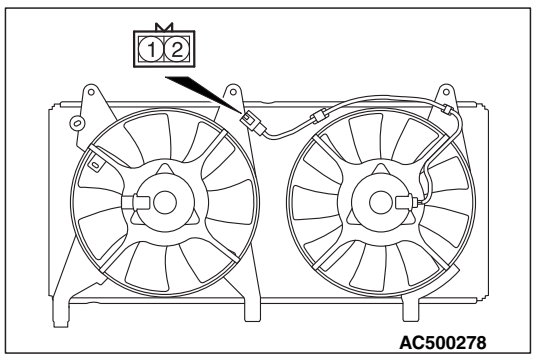
**STEP 12. Check the wiring harness between condenser fan motor connector A-29 (terminal 1) and ground.**




**Q: Is the wiring harness between condenser fan motor connector A-29 (terminal 1) and ground in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.
**NO :** Repair the wiring harness.

**STEP 13. Check the condenser fan motor operation.**



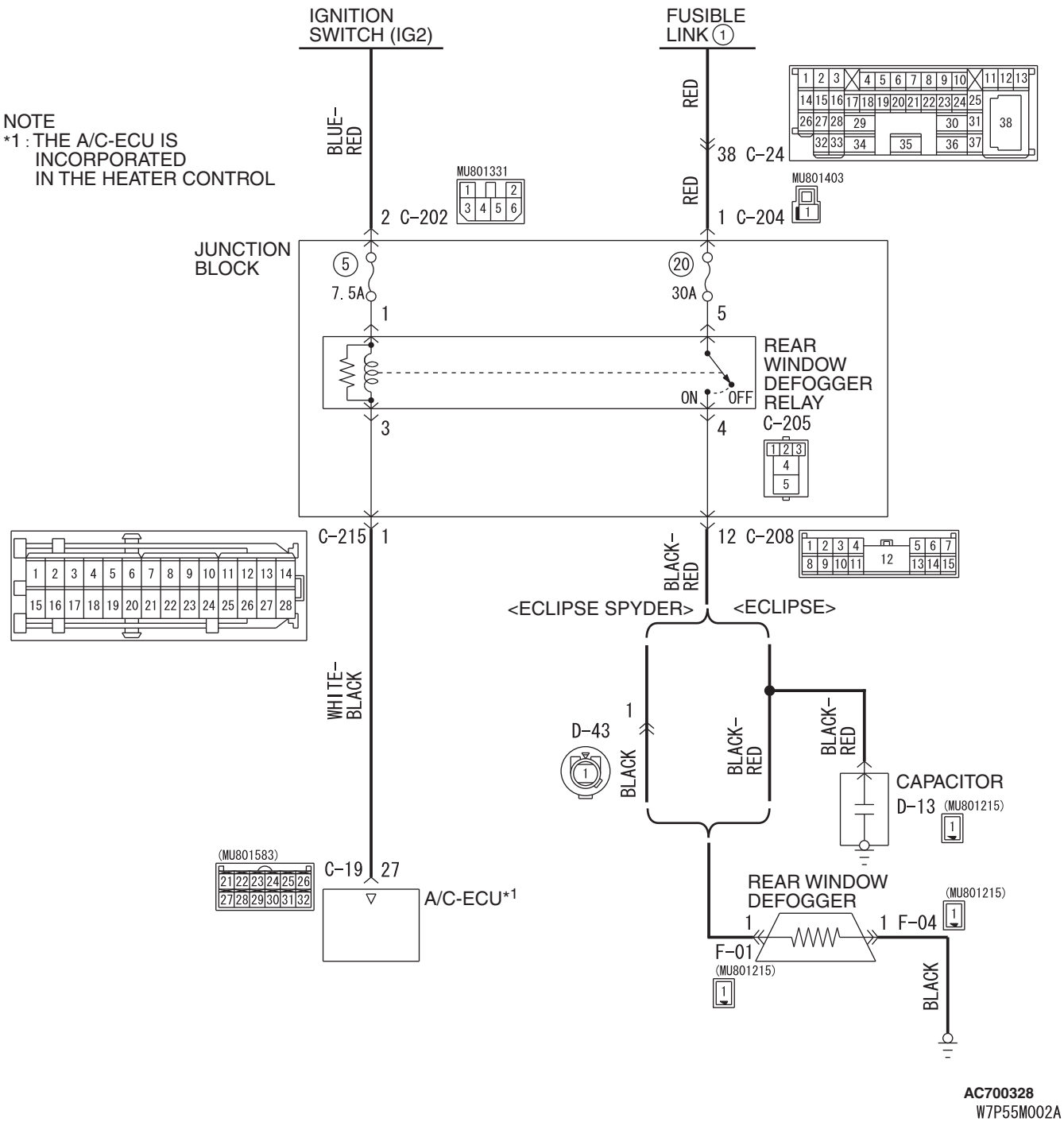

Check to be sure that the condenser fan motor operates when battery voltage is applied to terminal 2 and terminal 1 grounded.

**Q: Is there any abnormal noise?**

**YES :** Replace the ECM <M/T> or PCM <A/T>.
**NO :** Replace the condenser fan motor.

## INSPECTION PROCEDURE 10: Rear Window Defogger Function does not Operate.

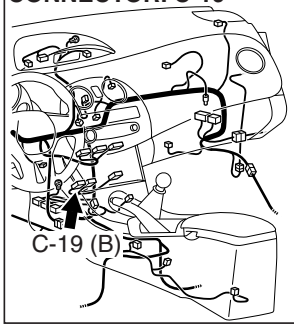
**Rear Window Defogger Circuit**



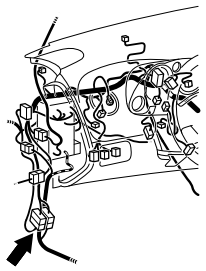

AC700328
W7P55M002A

**TSB Revision**

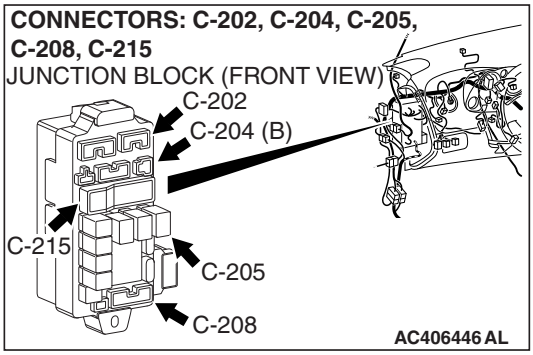
CONNECTOR: C-19



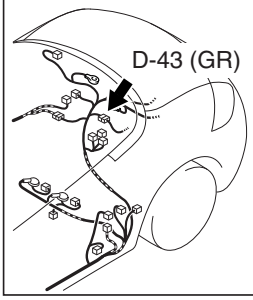

CONNECTOR: C-24



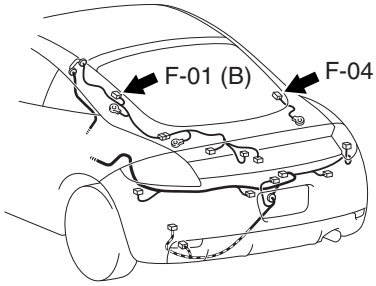

CONNECTORS: C-202, C-204, C-205, C-208, C-215



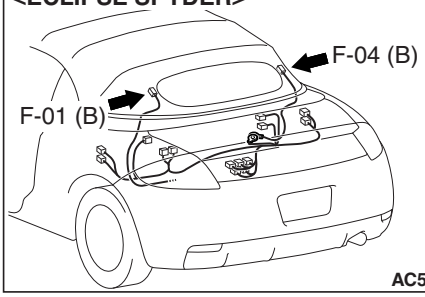

CONNECTOR: D-43 <ECLIPSE SPYDER>




CONNECTORS: F-01, F-04 <ECLIPSE>




CONNECTORS: F-01, F-04 <ECLIPSE SPYDER>




## TECHNICAL DESCRIPTION (COMMENT)

If the rear window defogger does not operate when the rear window defogger switch is turned on, the rear window defogger relay system may be defective.

## TROUBLESHOOTING HINTS

- Malfunction of the A/C-ECU
- Malfunction of the rear window defogger relay
- Damaged harness wires or connectors

## DIAGNOSIS

**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

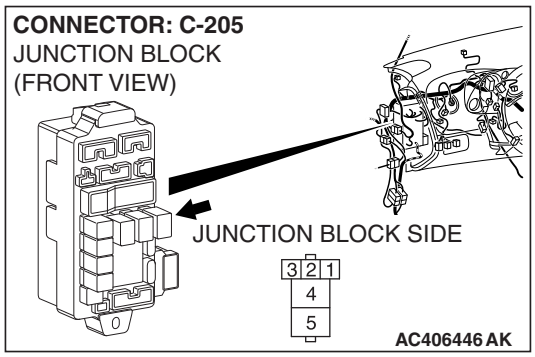
**STEP 1. Check the A/C and outside/inside air selection damper control motor operation.**

**Q: Do the A/C and outside/inside air selection damper control motor work normally?**

**YES :** Go to Step 2.

**NO :** Refer to Inspection procedure 1, "Malfunction of the A/C-ECU power supply system P.00-14."

**TSB Revision**

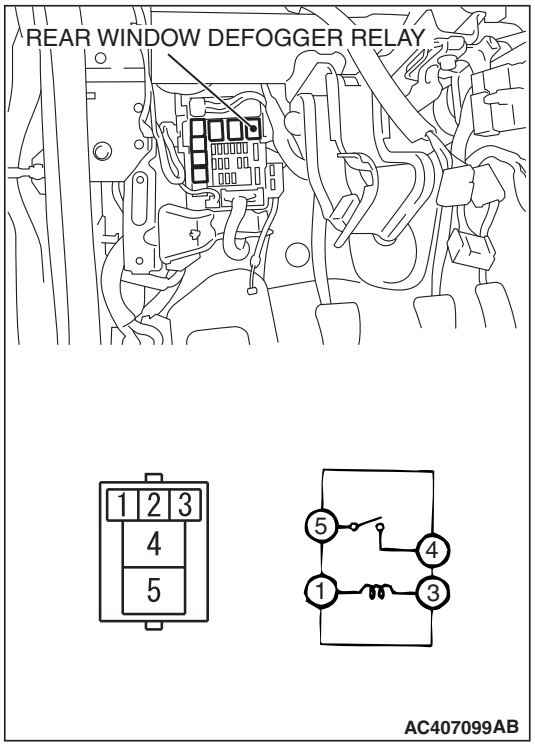



**STEP 2. Check rear window defogger relay connector C-205 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is rear window defogger relay connector C-205 in good condition?**

**YES :** Go to Step 3.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 3. Check the rear window defogger relay continuity.**

Follow the table below to check the rear window defogger relay for continuity.

| Battery voltage | Connect tester between | Specified condition |
|---|---|---|
| Not applied | 4 – 5 | Open Circuit |
| • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 3 to the negative battery terminal | 4 – 5 | Less than 2 ohms |

**Q: Is the rear window defogger relay in good condition?**

**YES :** Go to Step 4.

**NO :** Replace the rear window defogger relay.

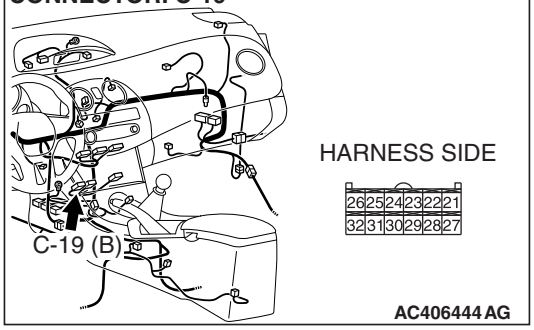
**STEP 4. Check A/C-ECU connector C-19 and rear window defogger connector F-01 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is A/C-ECU connector C-19 and rear window defogger connector F-01 in good condition?**

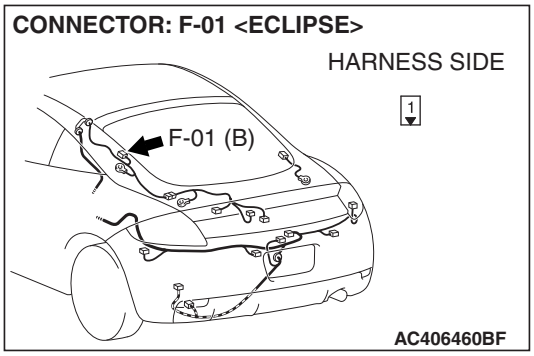
**YES :** Go to Step 5.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

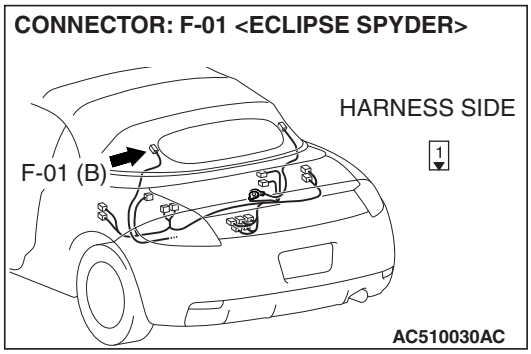
**CONNECTOR: C-19**




**CONNECTOR: F-01 <ECLIPSE>**

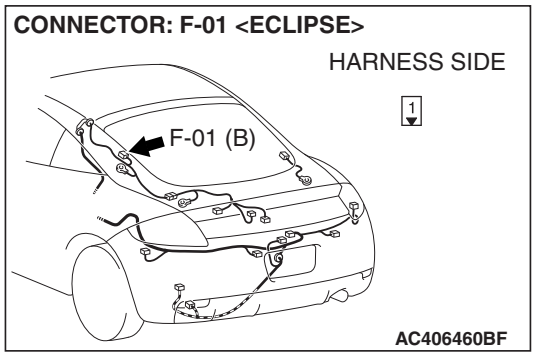


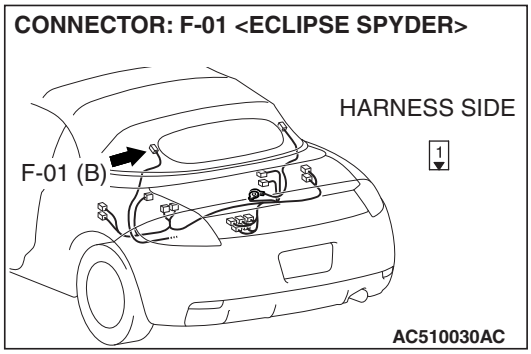

**CONNECTOR: F-01 <ECLIPSE SPYDER>**



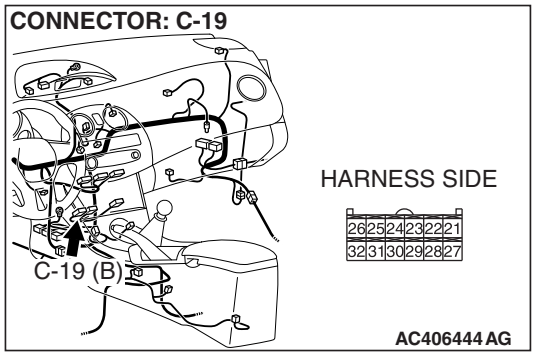
**STEP 5. Measure the voltage at rear window defogger connector F-01.**

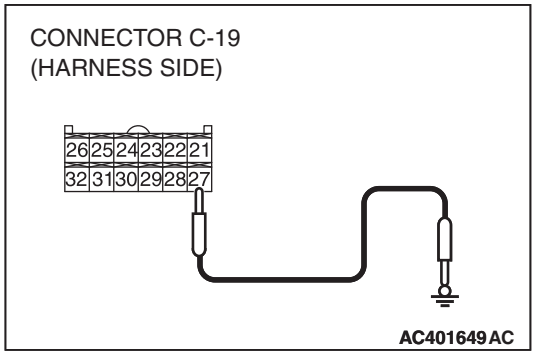
(1) Disconnect rear window defogger connector F-01, and measure the voltage at the harness side.

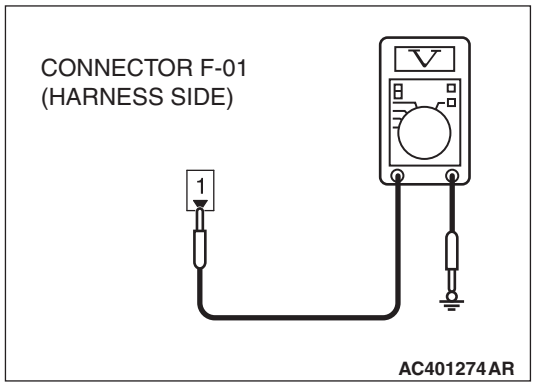



(2) Disconnect A/C-ECU connector C-19 and ground harness side terminal No.27.
(3) Turn the ignition switch to the "ON" position.



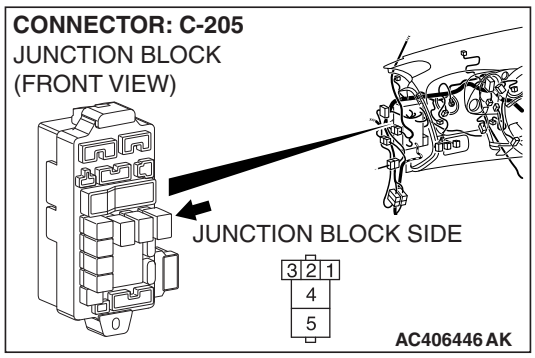



(4) Measure the voltage between rear window defogger connector F-01 terminal No.1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

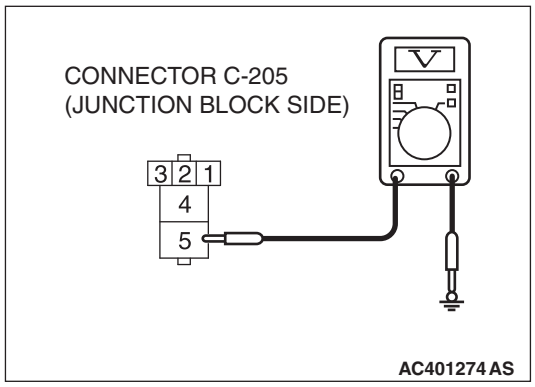
**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 12.
**NO :** Go to Step 6.

**STEP 6. Measure the voltage at rear window defogger relay connector C-205.**




(1) Disconnect rear window defogger relay connector C-205, and measure the voltage at the junction block side.

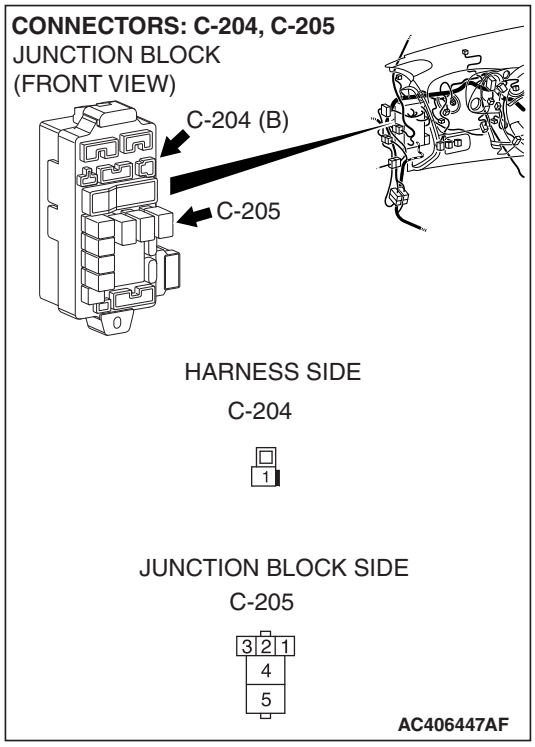


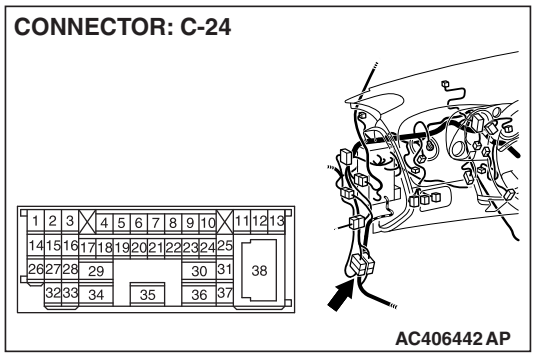

(2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 8.
**NO :** Go to Step 7.

**STEP 7. Check the wiring harness between rear window defogger relay connector C-205 (terminal 5) and the fusible link (1).**



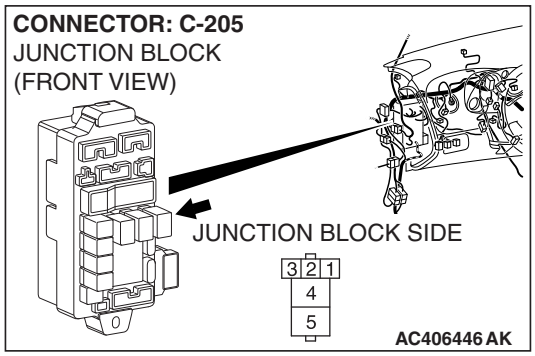

*NOTE: Also check intermediate connector C-24 and junction block connector C-204 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-24 and junction block connector C-204 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between rear window defogger relay connector C-205 (terminal 5) and the fusible link (1) in good condition?**

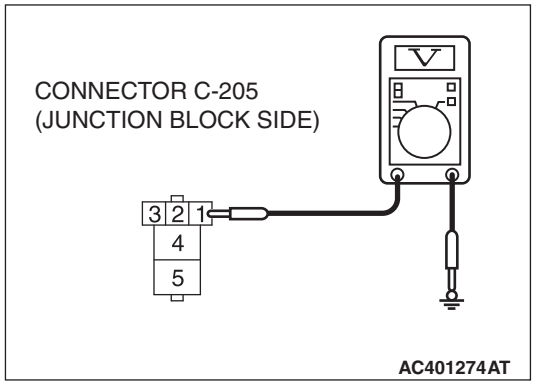
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

**STEP 8. Measure the voltage at rear window defogger relay connector C-205.**




(1) Disconnect rear window defogger relay connector C-205, and measure the voltage at the junction block side.
(2) Turn the ignition switch to the "ON" position.

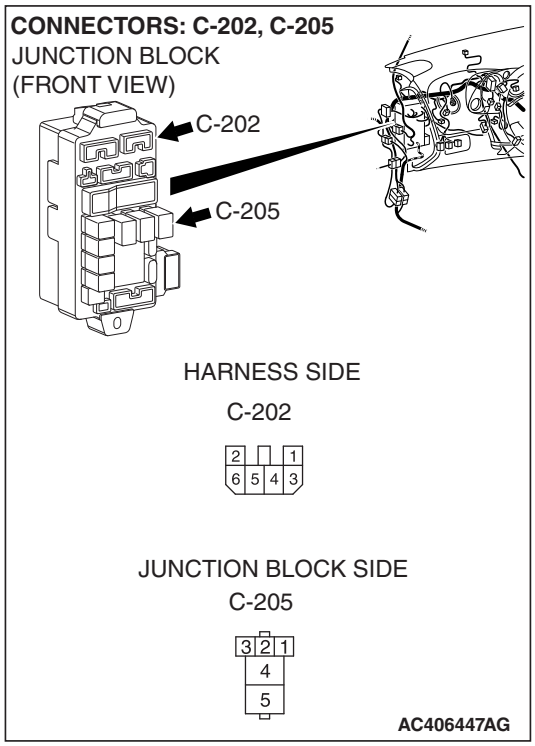



(3) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

**Q: Is the measured voltage approximately 12 volts?**

**YES :** Go to Step 10.
**NO :** Go to Step 9.

**STEP 9. Check the wiring harness between rear window defogger relay connector C-205 (terminal 1) and ignition switch (IG2).**



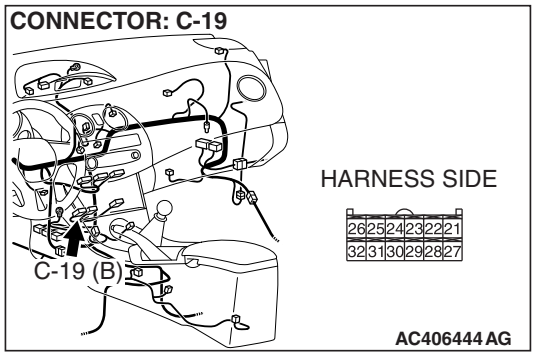
*NOTE: Also check junction block connector C-202 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-202 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

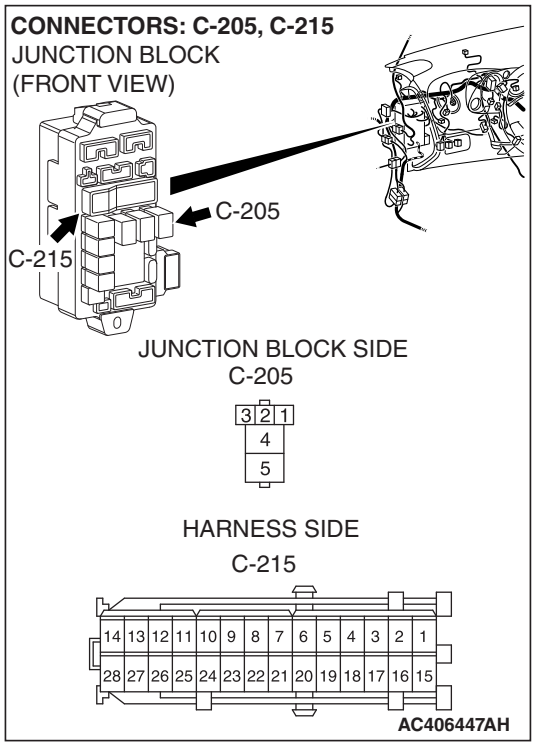
**Q: Is the wiring harness between rear window defogger relay connector C-205 (terminal 1) and ignition switch (IG2) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

**STEP 10. Check the wiring harness between rear window defogger relay connector C-205 (terminal 3) and A/C-ECU connector C-19 (terminal 27).**



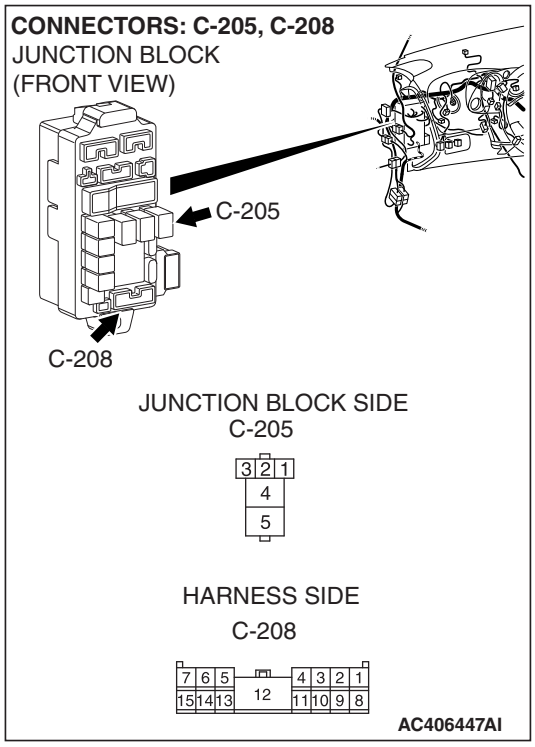
*NOTE: Also check junction block connector C-215 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-215 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

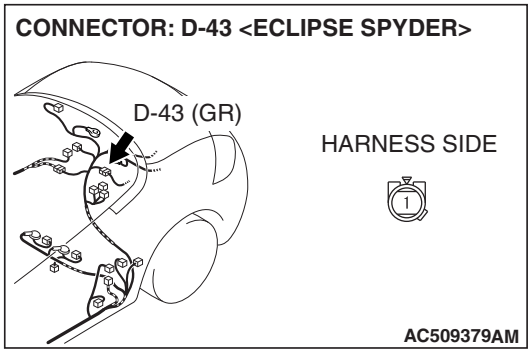
**Q: Is the wiring harness between rear window defogger relay connector C-205 (terminal 3) and A/C-ECU connector C-19 (terminal 27) in good condition?**

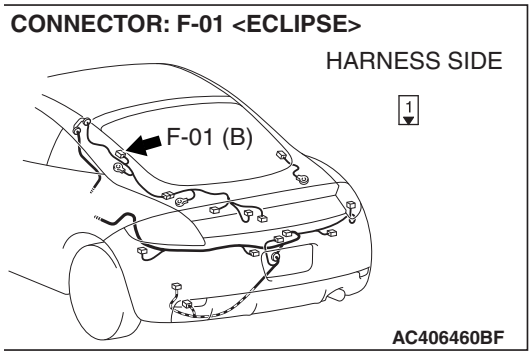
**YES :** Go to Step 11.

**NO :** Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

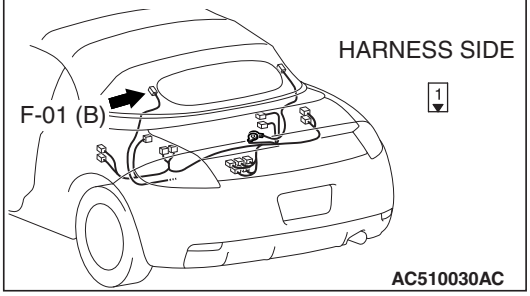
**STEP 11. Check the wiring harness between rear window defogger relay connector C-205 (terminal 4) and rear window defogger connector F-01 (terminal 1).**



CONNECTOR: F-01 <ECLIPSE SPYDER>




*NOTE: Also check junction block connector C-208 and intermediate connector D-43 <ECLIPSE SPYDER> for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-208 and intermediate connector D-43 <ECLIPSE SPYDER> is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between rear window defogger relay connector C-205 (terminal 4) and rear window defogger connector F-01 (terminal 1) in good condition?**

**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

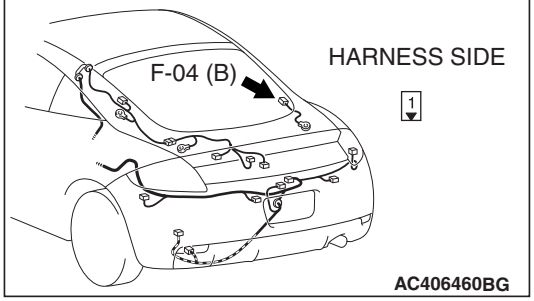
**STEP 12. Check rear window defogger connector F-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.**

**Q: Is rear window defogger connector F-04 in good condition?**

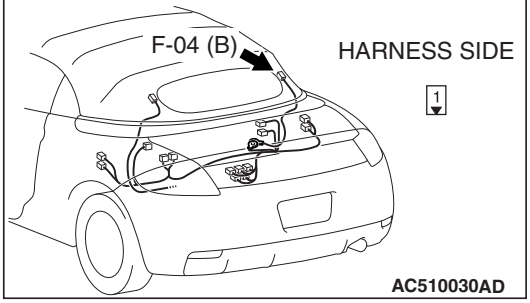
**YES :** Go to Step 13.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.

CONNECTOR: F-04 <ECLIPSE>

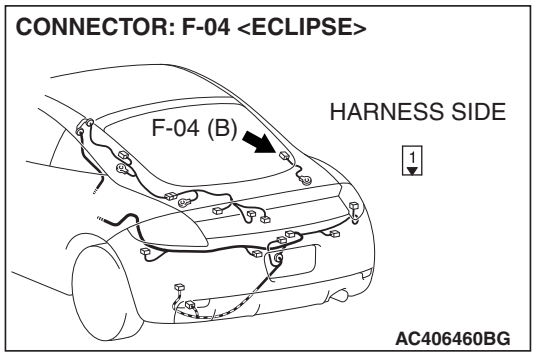


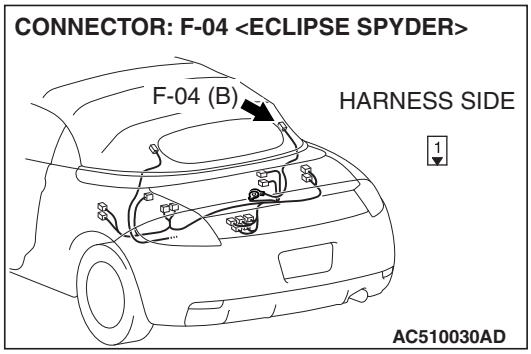

CONNECTOR: F-04 <ECLIPSE SPYDER>

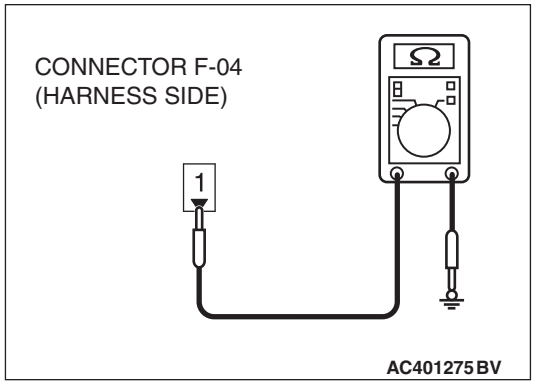


**STEP 13. Measure the resistance at rear window defogger connector F-04.**

(1) Disconnect rear window defogger connector F-04, and measure the resistance at the wiring harness side.



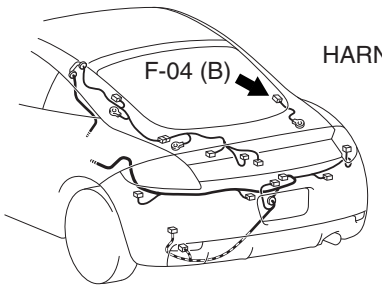

(2) Measure the resistance value between terminal 1 and ground.

**OK: Less than 2 ohms**

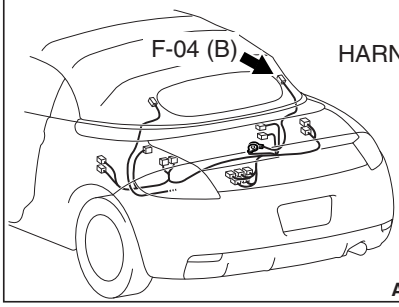
**Q: Does the measured resistance value correspond with this range?**

**YES :** Go to Step 15.
**NO :** Go to Step 14.

CONNECTOR: F-04 <ECLIPSE>




CONNECTOR: F-04 <ECLIPSE SPYDER>

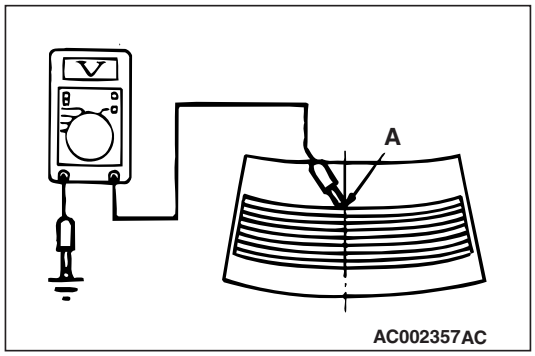



**STEP 14. Check the wiring harness between rear window defogger connector F-04 (terminal 1) and ground.**

**Q: Is the wiring harness between rear window rear window defogger connector F-04 (terminal 1) and ground in good condition?**

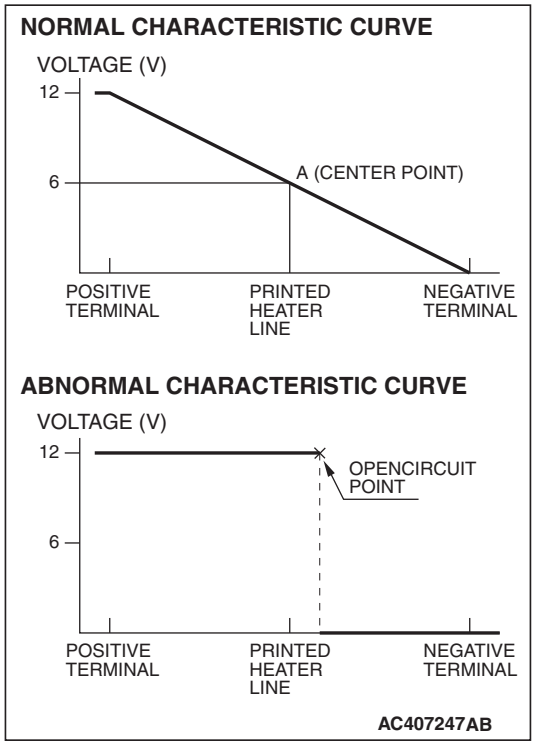
**YES :** It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-14.

**NO :** Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection P.00E-2.




**STEP 15. Check the rear window defogger.**

(1) Let the engine run at 2,000 r/min, and check the printed heater with the battery fully charged.




(2) Turn on the rear window defogger switch, and use a voltmeter to measure the voltage in each printed heater at middle point A on the rear window glass.
- The value should be approximately 6 volts.

**Q: Does the rear window defogger work normally?**

**YES :** Replace the heater control.
**NO :** Repair the rear window defogger.

## INSPECTION PROCEDURE 11: Rear Window Defogger Timer Function does not Operate.

### CIRCUIT OPERATION

Turn ON the rear window defogger switch. If the rear window defogger does not shut off after about 16 minutes then the rear window defogger timer is malfunctioning.

### TROUBLESHOOTING HINT

- Malfunction of the A/C-ECU*1
- Malfunction of the rear window defogger timer

*NOTE: *1: The A/C-ECU is incorporated in the heater control.*

### DIAGNOSIS

Replace the heater control.

## DATA LIST REFERENCE TABLE

M1554005100299

| M.U.T.-III scan tool display | Item No. | Inspection item | Inspection requirement | | Normal value |
|---|---|---|---|---|---|
| Air thermo sensor | 20 | Air thermo sensor | Ignition switch: ON | | The temperature measured behind the evaporator matches the displayed value on the scan tool while the engine is cold. |
| Refrigerant leak | 29 | Refrigerant leak | Ignition switch: ON | | The scan tool indication is normal |
| Air outlet c/o potentiometer | 55 | Mode selection damper control motor potentiometer | Ignition switch: ON | Damper position | Opening degree (%) |
| | | | | FACE | Approx. 100 |
| | | | | FOOT | Approx. 75 |
| | | | | FOOT/DEF. | Approx. 50 |
| | | | | DEF. | Approx. 0 |
| Air outlet c/o potentiometer (target) | 56 | Target value for mode selection damper control motor potentiometer | Ignition switch: ON | Damper position | Opening degree (%) |
| | | | | FACE | Approx. 100 |
| | | | | FOOT | Approx. 75 |
| | | | | FOOT/DEF. | Approx. 50 |
| | | | | DEF. | Approx. 0 |
| Low pressure judgment | 57 | Refrigerant pressure | Ignition switch: ON | | The scan tool indication is normal |
| Ambient air temperature sensor | 58 | Ambient air temperature sensor | Ignition switch: ON | | Outside air temperature and temperature displayed on the scan tool are identical. |
| Rear defogger switch | 60 | Rear window defogger switch | Ignition switch: ON | Rear window defogger switch: ON | Scan tool indication: ON |
| | | | | Rear window defogger switch: OFF | Scan tool indication: OFF |
| Pressure sensor | 61 | A/C pressure sensor | Ignition switch: ON | | Measured refrigerant pressure is nearly equal to the value shown on the scan tool. |
| Water temperature sensor | 62 | Engine coolant temperature sensor (Data received by CAN Communication) | Ignition switch: ON | | Engine coolant temperature and temperature displayed on the scan tool are identical. |

| M.U.T.-III scan tool display | Item No. | Inspection item | Inspection requirement | | Normal value |
|---|---|---|---|---|---|
| Air mix potentiometer | 63 | Air mixing damper control motor potentiometer | Ignition switch: ON | Damper position | Opening degree (%) |
| | | | | MAX. HOT | Approx. 100 |
| | | | | MAX. COOL | Approx. 0 |
| Air mix potentiometer (Target) | 64 | Target value for air mixing damper control motor potentiometer | Ignition switch: ON | Damper position | Opening degree (%) |
| | | | | MAX. HOT | Approx. 100 |
| | | | | MAX. COOL | Approx. 0 |
| In/out air c/o damper motor | 65 | Outside/inside air selection damper control motor | Ignition switch: ON | Damper set position | Damper position |
| | | | | Fresh air position | FRESH |
| | | | | Air recirculation position | RECIRC |
| A/C SW (Compressor) | 66 | A/C switch | Ignition switch: ON | A/C switch: ON | Scan tool indication: ON |
| | | | | A/C switch: OFF | Scan tool indication: OFF |

## ACTUATOR TEST REFERENCE

M1554005200274

| M.U.T.-III scan tool display | Item No. | Inspection item | Drive content |
|---|---|---|---|
| Rear defogger switch: OFF | 35 | Rear window defogger switch | Rear window defogger: OFF |
| Rear defogger switch: ON | 36 | | Rear window defogger: ON |
| Air mix damper motor: 0% | 42 | Air mixing damper control motor | Opening degree: approx. 0% (Max cool) |
| Air mix damper motor: 100% | 43 | | Opening degree: approx. 100% (Max hot) |
| Air mix damper motor: 50% | 44 | | Opening degree: approx. 50% |
| Air outlet c/o dumper: Bi_Level | 67 | Mode selection damper control motor | FOOT/FACE |
| Air outlet c/o dumper: DEF | 68 | | DEF |
| Air outlet c/o dumper: DEF/FOOT | 69 | | DEF/FOOT |
| Air outlet c/o dumper: FACE | 70 | | FACE |
| Air outlet c/o dumper: FOOT | 71 | | FOOT |

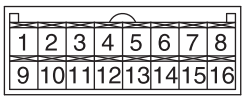
**TSB Revision**

| M.U.T.-III scan tool display | Item No. | Inspection item | Drive content |
|---|---|---|---|
| In/out changeover damper: Fresh | 72 | Outside/inside air selection damper control motor | Outside |
| In/out changeover damper: Recirc | 73 | | Inside |
| Idle up request: high load | 74 | Idle up operation | Idle up: high load |
| Idle up request: low load | 75 | | Idle up: low load |
| Idle up request: OFF | 76 | | Idle up: OFF |
| Condenser fan: 0% | 77 | Condenser fan | OFF |
| Condenser fan: 100% | 78 | | High speed |
| Condenser fan: 50% | 79 | | Middle speed |
| Rheostat: 0% | 80 | Heater control Illumination | Illumination: 0% |
| Rheostat: 100% | 81 | | Illumination: 100% |
| Rheostat: 50% | 82 | | Illumination: 50% |

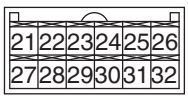
## CHECK AT A/C-ECU TERMINAL

M1552010300873

C-14




C-19



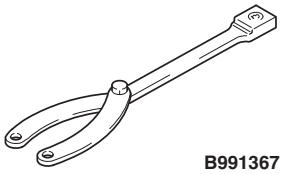
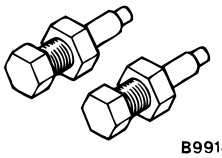
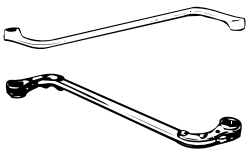
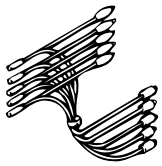
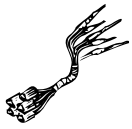
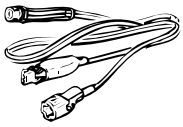
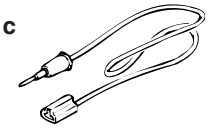
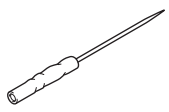

AC306430AC

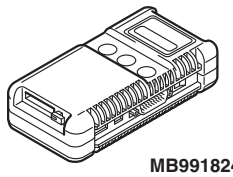
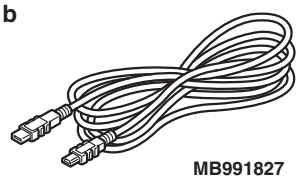
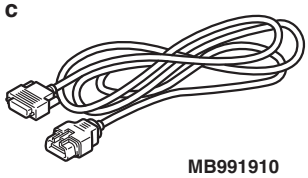
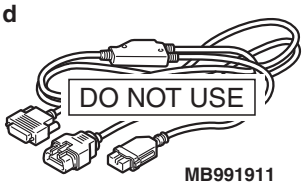
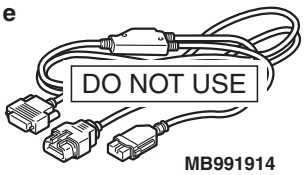
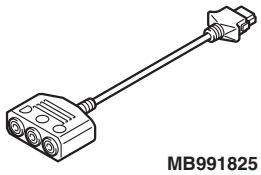
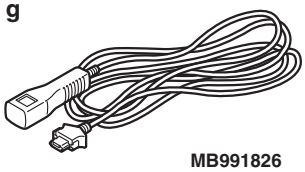
| Terminal No. | Check item | Checking requirement | Normal condition |
|---|---|---|---|
| 1 | A/C pressure sensor ground | Always | 1 V or less |
| 2 | Ground | Always | 1 V or less |
| 3 | A/C pressure sensor | Ignition switch: ON | 5 V |
| 4 | A/C pressure sensor | at 2.6 MPa (377 psi) | 3.9 V |
| 5, 6 | – | – | – |
| 7 | Power supply to the ignition switch (ACC) | Ignition switch: ON | Battery positive voltage |
| 8 | Back-up power supply | Always | Battery positive voltage |
| 9 | Air mixing damper control motor | When the air mix damper is moved to the MAX. COOL position. | 10 V |
| | | When the air mix damper is moved to the MAX. HOT position. | 0.5 V |
| 10 | Sensors and potentiometers ground | Always | 1 V or less |
| 11 | Mode selection damper control motor potentiometer input | When the damper has moved to the DEF position. | 0.67 V |

| Terminal No. | Check item | Checking requirement | Normal condition |
|---|---|---|---|
| 12 | Air mixing damper control motor potentiometer input | When the damper door has moved to the MAX. HOT position. | 1.4 V |
| 13 | Air thermo sensor input | When sensor temperature is 25°C (77°F) [1.5 kΩ] | 2.2 V |
| 14 | Ambient air temperature sensor input | When sensor temperature is 25°C (77°F) [4 kΩ] | 1.9 V |
| 15 | Potentiometer power supply | Ignition switch: ON | 5 V |
| 16 | Power supply to the ignition switch (IG2) | Ignition switch: ON | Battery positive voltage |
| 21 | ILL power supply | Lighting switch: ON | Battery positive voltage |
| 22 | Illumination ground | Always | 1 V or less |
| 23 | A/C compressor relay | A/C compressor relay: ON | Battery positive voltage |
| 24 | Blower switch | Ignition switch: ON<br>Blower switch: ON | Battery positive voltage |
| 25, 26 | – | – | – |
| 27 | Rear window defogger relay | Ignition switch: ON | Battery positive voltage |
| 28 | Outside/inside air selection damper control motor (outside) | When the damper flap is moving to the air recirculation position. | 0.5 V |
| | | When the damper flap is moving to the outside air position. | 1 V or less (when the motor is stopped) |
| 29 | Outside/inside air selection damper control motor (inside) | When the damper flap is moving to the air recirculation position. | 0 V (when the motor is stopped) |
| | | When the damper flap is moving to the outside air position. | 0.5 V |
| 30 | Mode selection damper control motor (DEF) | When the damper is moved to the FACE position. | 0.5 V |
| | | When the damper is moved to the DEF position. | 10 V |
| 31 | Mode selection damper control motor (FACE) | When the damper is moved to the FACE position. | 10 V |
| | | When the damper is moved to the DEF position. | 0.5 V |
| 32 | Air mixing damper control motor | When the air mix damper is moved to the MAX. COOL position. | 0.5 V |
| | | When the air mix damper is moved to the MAX. HOT position. | 10 V |

# SPECIAL TOOLS

M1552000600419

| Tool | Tool number and name | Supersession | Application |
|---|---|---|---|
|  B991367 | MB991367<br>Special spanner | MB991367-01 | Armature mounting nut of compressor removal and installation |
|  B991386 | MB991386 Pin | MIT217213 | Armature mounting nut of compressor removal and installation |
|  MB990900 | MB990900 or MB991164 Door adjusting wrench | MB990900-01 | Removal and installation of the heater unit and front deck crossmember assembly |
|  MB991658 | MB991658<br>Test harness set | Tool not available | Inspection of A/C pressure sensor |
| a  <br>b  <br>c  <br>d DO NOT USE MB991223 | MB991223<br>a. MB991219<br>b. MB991220<br>c. MB991221<br>d. MB991222<br>Harness set<br>a. Check harness<br>b. LED harness<br>c. LED harness adapter<br>d. Probe | General service tool (jumper) | Continuity check and voltage measurement at harness wire or connector<br>a. For checking connector pin contact pressure<br>b. For checking power supply circuit<br>c. For checking power supply circuit<br>d. For connecting a locally sourced tester |
|  MB992006 | MB992006<br>Extra fine probe | General service tool | Making voltage and resistance measurement during troubleshooting |

| Tool | Tool number and name | Supersession | Application |
|---|---|---|---|
| a<br>  <br>MB991824<br>b<br>  <br>MB991827<br>c<br>  <br>MB991910<br>d<br>  <br><br>MB991911<br>e<br>  <br><br>MB991914<br>f<br>  <br>MB991825<br>g<br>  <br>MB991826<br>MB991958 | MB991958<br>a. MB991824<br>b. MB991827<br>c. MB991910<br>d. MB991911<br>e. MB991914<br>f. MB991825<br>g. MB991826<br>M.U.T.-III sub-assembly<br>a. Vehicle communication interface (V.C.I.)<br>b. M.U.T.-III USB cable<br>c. M.U.T.-III main harness A (Vehicles with CAN communication system)<br>d. M.U.T.-III main harness B (Vehicles without CAN communication system)<br>e. M.U.T.-III main harness C (for Chrysler models only)<br>f. M.U.T.-III measurement adapter<br>g. M.U.T.-III trigger harness | MB991824-KIT<br>*NOTE: g: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.* | **⚠ CAUTION**<br>**M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle.**<br>DTC, data list and actuator test check. |

# ON-VEHICLE SERVICE

## REFRIGERANT LEVEL TEST

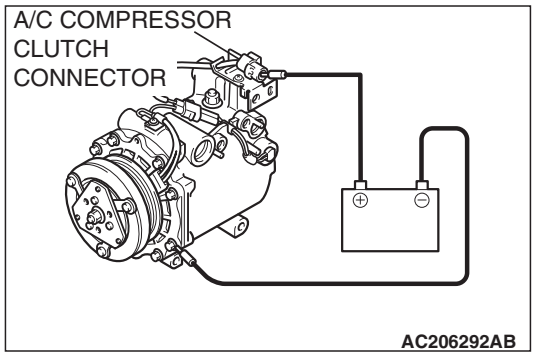
M1552008400505

Use the refrigerant recovery station to remove all of the refrigerant, and then calculate the amount of the refrigerant and charge it.

**TSB Revision**

## A/C COMPRESSOR CLUTCH TEST

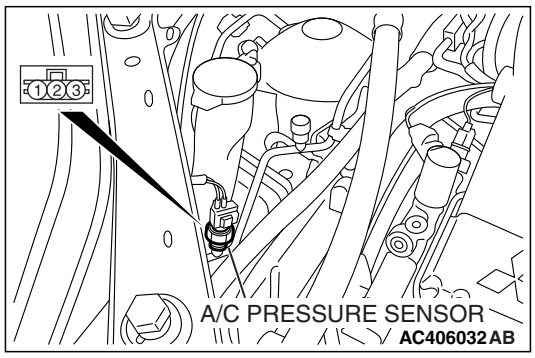
M1552019900098



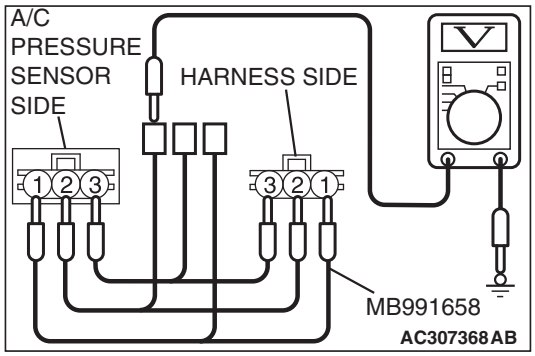

1. Disconnect the A/C compressor clutch connector to the A/C compressor clutch.
2. Connect positive battery voltage directly to the connector for the A/C compressor clutch.
3. If the A/C compressor clutch is normal, there will be a "click". If the pulley and armature do not make contact ("no click"), there is a malfunction.

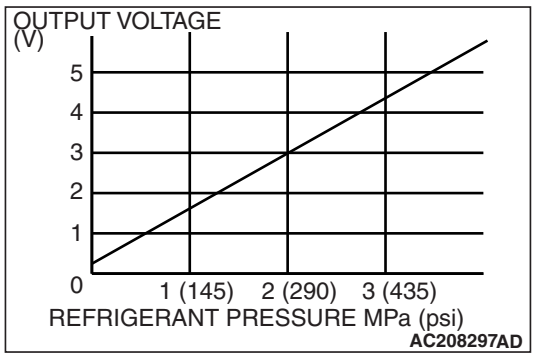
## SIMPLE INSPECTION OF THE A/C PRESSURE SENSOR

M1552014700259




1. Assemble a gauge manifold on the high-pressure service valve.
2. Disconnect the A/C pressure sensor connector and connect special tool test harness MB991658 as shown in the illustration.
3. Turn ON the engine and then turn ON the A/C switch.




4. At this time, check to see that the voltage of A/C pressure sensor terminal No. 2 reflects the specifications of the figure.

   *NOTE: The allowance shall be defined as ±5%.*

## COMPRESSOR DRIVE BELT ADJUSTMENT

M1552001000595

Refer to GROUP 00, Maintenance Service – Drive Belts P.00-55.

## CHARGING

M1552001200555

Use the refrigerant recovery station to charge the refrigerant.

### METHOD BY USING REFRIGERANT RECOVERY AND RECYCLING UNIT

Using the refrigerant recovery and recycling unit, refill the refrigerant.

*NOTE: Refer to the Refrigerant Recovery and Recycling Unit's Instruction Manual for operation of the unit.*

## DISCHARGING SYSTEM

Use the refrigerant recovery unit to discharge refrigerant gas from the system.

*NOTE: Refer to the Refrigerant Recovery and Recycling Unit's Instruction Manual for operation of the unit.*

## REFILLING OF OIL IN THE A/C SYSTEM

Too little oil will provide inadequate compressor lubrication and cause a compressor failure. Too much oil will increase discharge air temperature.

When a compressor is installed at the factory, it contains 140 $cm^3$ (4.7 fl.oz) of refrigerant oil. While the A/C system is in operation, the oil is carried through the entire system by the refrigerant. Some of this oil will be trapped and retained in various parts of the system.

When the following system components are changed, it is necessary to add oil to the system to replace the oil being removed with the component.

**Compressor oil: SUN PAG 56**

**Quantity:**

**Evaporator: 60 $cm^3$ (2.0 fl.oz)**

**Condenser: 15 $cm^3$ (0.5 fl.oz)**

**Suction hose: 10 $cm^3$ (0.3 fl.oz)**

## PERFORMANCE TEST

M1552001401206

## TEST CONDITION

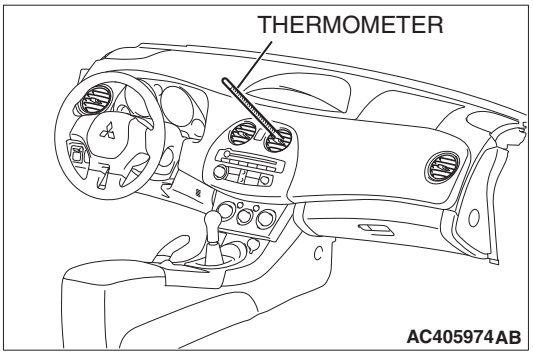
| Item | | Settings |
|---|---|---|
| Environmental condition | Measurement location | In a shade or indoors |
| | Temperature | 20°C – 50°C (68°F – 122°F) |
| | Humidity | 30 – 80% RH |
| Vehicle body condition | Hood | Fully opened |
| | Door | Fully open for door, window, and liftgate |

| Item | | Settings |
|---|---|---|
| Air conditioner condition | Air conditioner switch | ON |
| | Air volume | Maximum air volume |
| | Temperature control | MAX COOL |
| | Air outlet | FACE |
| | Outside/inside air selection | Air recirculation position |
| Engine speed | | Hold the engine speed at 1,500 r/min after warming up. |
| Transmission | | N or P |

## TEST CONDITION SETTING

Check that the temperature/humidity of measurement location satisfies the test conditions, and then set the vehicle body conditions to the designated status according to the test conditions. If the temperature/humidity is not within the test conditions, an accurate judgment cannot be made. Therefore, postpone the performance test.

## COOLING PERFORMANCE CHECK




1. Insert a thermometer into the position below.
   - Air outlet located at the center of instrument panel

   *NOTE: Set a thermometer so that cool air from the air outlet blows directly against the sensing part.*
2. Set a wet and dry bulb thermometer in the air intake.
   - Front passenger's foot area (below the glove box)

   *NOTE: Set a wet and dry bulb thermometer so that cool air does not blow against it.*
3. Start the engine to warm up. Confirm that the engine speed of the test condition is satisfied.
4. Set the A/C control panel to the mode instructed in the test conditions.
5. Wait until the air outlet temperature is stable (approximately 10 minutes after the A/C starts), and measure dry-bulb/wet-bulb temperatures at the air outlet and the air intake.
6. If the air outlet temperature is in the range specified by the table below, it is judged normal. If the temperature is outside the permissible range in the table below, refer to the refrigerant gas pressure inspection result, and check each section according to the diagnosis chart of refrigerant system.

| Garage ambient air temperature °C (°F) | 20 (68) | 30 (86) | 40 (104) | 50 (122) |
|---|---|---|---|---|
| Discharge air temperature °C (°F) | 3 (37) – 15 (59) | 12 (54) – 25 (77) | 22 (72) – 34 (93) | 31 (88) – 44 (111) |

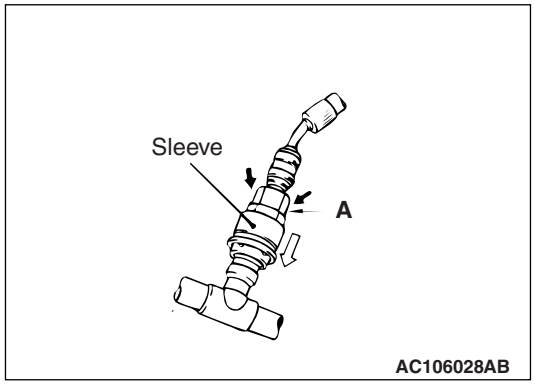
## REFRIGERANT GAS PRESSURE CHECK

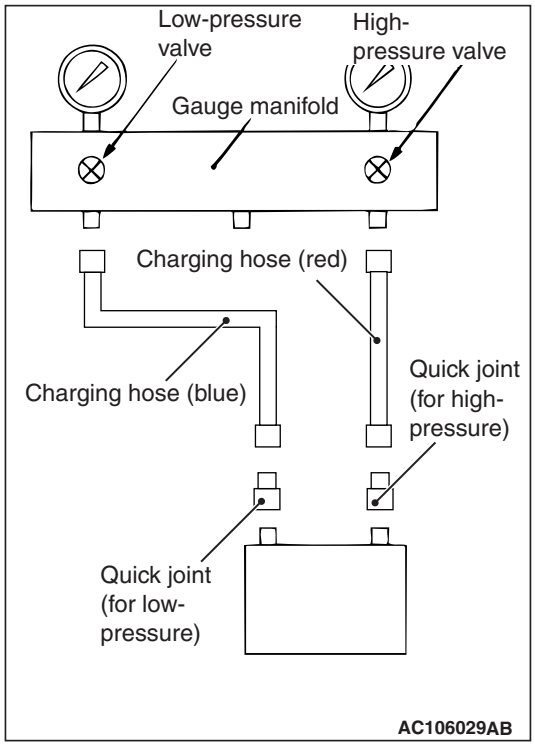
**⚠ CAUTION**

- **The temperature of equipment in the engine room is high and the refrigerant gas pressure is also high immediately after the engine and A/C operation are stopped, thus leave the vehicle for a while, and then perform the refrigerant gas pressure check.**
- **On completion, stop the engine and wait until the high-pressure side of the gauge manifold is depressurized. Then remove the quick joints and the others.**

**⚠ CAUTION**

- **Place the quick joint onto the service valve, and press to fit the part A securely until the sleeve clicks into place.**
- **When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.**




1. Check that the engine and A/C are stopped.
2. Close the high-pressure valve of the gauge manifold.
3. Connect the charging hose (red) to the hi-pressure side of the gauge manifold.
4. Connect the quick joint (for high pressure) to the charging hose (red).
5. Install the quick joint (for high pressure) to the high-pressure side service valve of the vehicle.
6. Close the low-pressure valve of the gauge manifold.
7. Connect the charging hose (blue) to the low-pressure side of the gauge manifold.
8. Connect the quick joint (for low pressure) to the charging hose (blue).
9. Install the quick joint (for low pressure) to the low-pressure side service valve of the vehicle.
10. Start and fully warm up the engine, and then check that the engine speed of the test condition is satisfied.
11. Set the A/C control panel to the mode instructed in the test conditions.
12. Measure the high pressure/low pressure, and check that the measurement is within the permissible range of the table below. If the value is outside the permissible range, refer to the cooling performance check result, and perform a check according to the diagnosis chart of refrigerant system.

    *NOTE: Prior to the measurement, wait until the refrigerant pressure is stable. (Approximately 10 minutes after A/C operation start)*

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| Garage ambient air temperature °C (°F) | 20 (68) | 30 (86) | 40 (104) | 50 (122) |
|---|---|---|---|---|
| Compressor high pressure MPa (psi) | 0.6 (87) – 1.5 (218) | 1.0 (145) – 1.8 (261) | 1.3 (189) – 2.2 (319) | 1.7 (247) – 2.5 (363) |
| Compressor low pressure MPa (psi) | 0.08 (12) – 0.33 (48) | 0.15 (22) – 0.40 (58) | 0.22 (32) – 0.47 (68) | 0.28 (41) – 0.54 (78) |

## DIAGNOSIS BY REFRIGERANT PRESSURE

M1552023000065

| A/C system symptom | Measurement circumstance | | | | Cause | Measures |
|---|---|---|---|---|---|---|
| | High pressure | Low pressure | Air outlet temperature | Note | | |
| Cooler is not effective. | Low | High | High | • Pressure for low pressure side is high, and high pressure side is low.<br>• When the A/C operation is stopped, the pressures of low pressure side and high pressure side immediately become identical. | • Leakage inside compressor<br>• Faulty compression of compressor | 1. Check according to the compressor check.<br>1. When no foreign object is present to the oil, and when the color is light gray, replace only the compressor.<br>2. When foreign objects are mixed to the oil, and the color is black, replace the compressor and receiver.<br>2. Perform the evacuation sufficiently to remove the foreign objects and moisture in the cycle.<br>3. Fill the new gas to the specified amount. |
| | High | High | High | • Low pressure side/high pressure side pressure is too high.<br>• Low pressure side piping is too hot to touch. | • Air is mixed to the refrigerant cycle.<br>• Evacuation is insufficient. | 1. Perform the evacuation sufficiently, and remove the foreign objects and moisture in the cycle.<br>2. Fill the new gas to the specified amount. |
| Sufficient cooling and insufficient cooling occur periodically. | Fluctuation | Fluctuation | Fluctuation | During the air conditioner operation, the low pressure side pressure alternates between the negative pressure and normal. (also in the high pressure side, the abnormal and normal statuses are alternated). | The moisture in the refrigerant cycle becomes frozen in the expansion valve, then the circulation of refrigerant is stopped temporarily. Subsequently, the status recovers to normal by the melting of ice. | 1. Replace the receiver (drier).<br>2. Perform the evacuation sufficiently, and remove the moisture in the cycle.<br>3. Fill the new refrigerant to the specified amount. |

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| A/C system symptom | Measurement circumstance | | | | Cause | Measures |
|---|---|---|---|---|---|---|
| | High pressure | Low pressure | Air outlet temperature | Note | | |
| Cooler is sometimes not effective. (works occasionally) | Low | Vacuum | Fluctuation | • The low pressure side pressure indicates the vacuum, and the high pressure side indicates the low pressure.<br>• To the piping before and after the expansion valve, frost or dew is observed. | • The foreign objects or moisture inside the refrigerant cycle deposits or freezes inside the expansion valve, and the refrigerant flow is disturbed.<br>• Because of the expansion valve operation failure, the refrigerant flow is disturbed. | 1. Check the expansion valve.<br>1. If foreign objects are present inside the expansion valve, remove them by using an air gun or others.<br>2. When no foreign object is present, the expansion valve operation failure is suspected. Therefore, replace the expansion valve.<br>2. Perform the evacuation sufficiently, and remove the foreign objects and moisture in the cycle.<br>3. Fill the new refrigerant to the specified amount. |

| A/C system symptom | Measurement circumstance | | | | Cause | Measures |
|---|---|---|---|---|---|---|
| | High pressure | Low pressure | Air outlet temperature | Note | | |
| Cooling effectiveness is bad. | Low | Low | Slightly high | • Low pressure side/high pressure side pressure is low.<br>• Outlet air temperature is high. | • Gas leakage is present to somewhere in the refrigerant cycle.<br>• Refrigerant gas amount is insufficient. | 1. When the pressure gauge indication is close to zero, check the leak position, and then repair the leakage. Also, when the value is lower than the standard pressure, check if the gas leakage is present, and repair if necessary.<br>2. After checking the leak position, sufficiently perform the evacuation, then fill the new gas to the specified amount. |
| | High | High | Slightly low | Low pressure side/high pressure side pressure is too high. | • Refrigerant amount is excessive.<br>• Condenser cooling is insufficient. | 1. Clean the condenser fin (fouling, fin clogging)<br>2. Check the condenser fan motor (radiator fan) operation.<br>3. When 1 and 2 are normal, recover all the refrigerant. Then, perform a sufficient evacuation again, and fill the new gas to the specified amount. |
| | High | High | High | • Low pressure side/high pressure side pressure is too high.<br>• Frost or dew is formed to the low pressure side. | Expansion valve trouble (valve opened excessively) | Replace the expansion valve. |
| | Normal | Normal | Slightly high | - | Because of the slight difference of measurement environment, secular change of vehicle, or others, it is possible that the outlet temperature fluctuation has occurred. | Check the status for a while, and if the status does not improve, recover all the refrigerant, then fill to the appropriate amount. |

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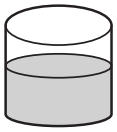
## COMPRESSOR CHECK

| Trouble symptom | Check method/circumstance | Cause | Measures |
|---|---|---|---|
| Abnormal noise from compressor main body at A/C operation (rattling noise) | • Refrigerant cycle gauge pressure check<br>1. Low pressure side/high pressure side pressure is high.<br>2. Pressure hunting occurs. | Abnormal noise due to excessive refrigerant charging | Fill an appropriate amount of refrigerant. |
| | • Check the refrigerant cycle gauge pressure. When the pressure difference between the low pressure side and high pressure side is small, remove the compressor oil, and perform the oil judgment. | Damage to inside the compressor | Compressor oil judgment result: Between transparent and grey/ No contamination with foreign materials<br>  <br>Measures: Replace only the compressor.<br><br>Compressor oil judgment result: Between grey and black/ Contaminated with foreign materials<br> <br>easures: Replace the compressor and the rec<br>AC610320AB |
| • Compressor malfunction (belt slip)<br>• Insufficient cooler effectiveness | Check the compressor rotation, and if a seizure or sticking is present, remove the compressor oil, then perform a judgment. | | |

## REFRIGERANT LEAK REPAIR PROCEDURE

M1552001500363

### LOST CHARGE

If the system has lost all charge due to a leak:

1. Evacuate the system. (Refer to P.55A-184).
2. Charge the system with approximately 0.453 kg (1 pound) of refrigerant.
3. Check for leaks.
4. Discharge the system.
5. Repair leaks.

**⚠ CAUTION**

**Replacement filter-drier units must be sealed while in storage. The drier used in these units will saturate water quickly upon exposure to the atmosphere. When installing a drier, have all tools and supplies ready for quick assembly to avoid keeping the system open any longer than necessary.**

6. Replace receiver drier.
7. Evacuate and charge system.

### LOW CHARGE

If the system has not lost all of its refrigerant charge; locate and repair all leaks. If it is necessary to increase the system pressure to find the leak (because of an especially low charge) add refrigerant. If it is possible to repair the leak without discharging the refrigerant system, use the procedure for correcting low refrigerant level.

### HANDLING TUBING AND FITTINGS

Kinks in the refrigerant tubing or sharp bends in the refrigerant hose lines will greatly reduce the capacity of the entire system. High pressures are produced in the system when it is operating. Extreme care must be exercised to make sure that all connections are pressure tight. Dirt and moisture can enter the system when it is opened for repair or replacement of lines or components. The following precautions must be observed. The system must be completely dis-

charged before opening any fitting of connection in the refrigeration system. Open fittings with caution even after the system has been discharged. If any pressure is noticed as a fitting is loosened, allow trapped pressure to bleed off very slowly.
Never attempt to rebend formed lines to fit. Use the correct line for the installation you are servicing. A good rule for the flexible hose lines is keep the radius of all bends at least 10 times the diameter of the hose.

## COMPRESSOR NOISE CHECK

You must first know the conditions when the noise occurs. These conditions are: weather, vehicle speed, in gear or neutral, engine temperature or any other special conditions.
Noises that develop during A/C operation can often be misleading. For example: what sounds like a failed front bearing or connecting rod, may be caused by loose bolts, nuts, mounting brackets, or a loose clutch assembly. Verify accessory drive belt tension (power steering or generator).
Improper accessory drive belt tension can cause a misleading noise when the compressor is engaged and little or no noise when the compressor is disengaged.
Drive belts are speed-sensitive. That is, at different engine speeds, and depending upon belt tension, belts can develop unusual noises that are often mistaken for mechanical problems within the compressor.

Sharper bends will reduce the flow of refrigerant. The flexible hose lines should be routed so that they are at least 80 mm (3.1 inches) from the exhaust manifold. It is good practice to inspect all flexible hose lines at least once a year to make sure they are in good condition and properly routed.
On standard plumbing fittings with O-rings, these O-rings are not reusable.

M1552008700346

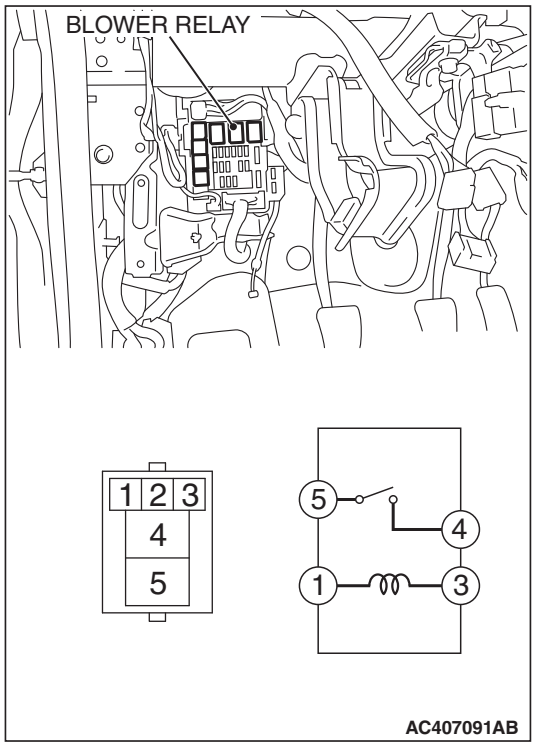
## ADJUSTMENT

1. Select a quiet area for testing. Duplicate conditions as much as possible. Switch the compressor on and off several times to clearly identify compressor noise. To duplicate high ambient conditions (high head pressure), restrict air flow through the condenser. Install a manifold gauge set to make sure discharge pressure doesn't exceed 2,070 kPa (300.2 psi).
2. Tighten all compressor mounting bolts, clutch mounting bolt, and compressor drive belt. Check to assure clutch coil is tight (no rotation or wobble).
3. Check refrigerant hoses for rubbing or interference that can cause unusual noises.
4. Check refrigerant charge. (Refer to P.55A-184).
5. Recheck compressor noise as in Step 1.
6. If noise still exists, loosen compressor mounting bolts and retighten. Repeat Step 1.
7. If noise continues, replace compressor and repeat from Step 1.

## POWER RELAY CHECK

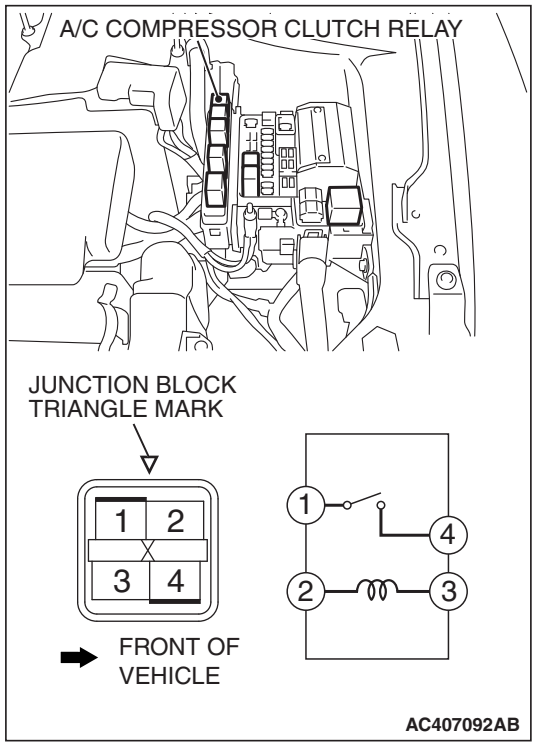
M1552008800536

## BLOWER RELAY CONTINUITY CHECK



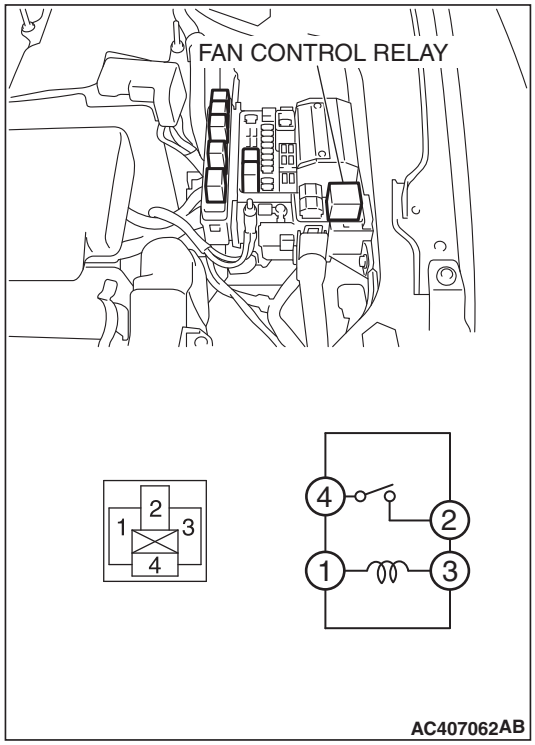

| Battery voltage | Tester connection | Specified condition |
|---|---|---|
| Not applied | 4 – 5 | Open circuit |
| • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 3 to the negative battery terminal | 4 – 5 | Less than 2 ohms |

## A/C COMPRESSOR CLUTCH RELAY CONTINUITY CHECK



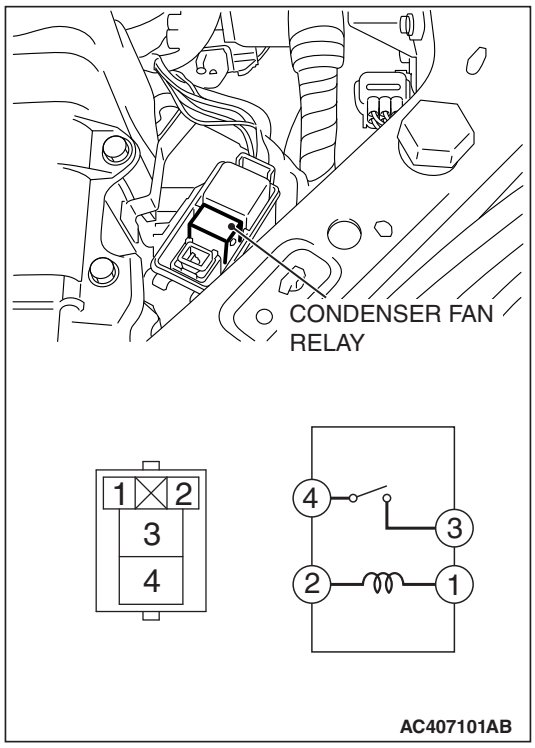

| Battery voltage | Tester connection | Specified condition |
|---|---|---|
| Not applied | 1 – 4 | Open circuit |
| • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 3 to the negative battery terminal | 1 – 4 | Less than 2 ohms |

## FAN CONTROL RELAY CONTINUITY CHECK




| Battery voltage | Tester connection | Specified condition |
|---|---|---|
| Not applied | 2 – 4 | Open circuit |
| • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 3 to the negative battery terminal | 2 – 4 | Less than 2 ohms |

## CONDENSER FAN RELAY CONTINUITY CHECK <2.4L ENGINE>




| Battery voltage | Tester connection | Specified condition |
|---|---|---|
| Not applied | 3 – 4 | Open circuit |
| • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | 3 – 4 | Less than 2 ohms |

## IDLE-UP OPERATION CHECK

M1552001600627

### <2.4 L ENGINE>

1. Before inspection and adjustment, set vehicle in the following condition:
   - Engine coolant temperature: 80 – 90 °C (176.0 – 194.0 °F)
   - Lights, electric cooling fan and accessories: OFF
   - Transaxle: Neutral ("N" or "P" position)
   - Steering wheel: Straightforward
2. Check whether or not the idle speed is the standard value. Refer to GROUP 11A, On-vehicle Service – Idle Speed Check P.11A-14.

   **Standard value: 700 ± 100 r/min**
3. Turn on the A/C switch and the blower speed selection dial. Engine idling speed should be within the standard value:

   **Standard value: 700 ± 50 r/min**

   *NOTE: It is not necessary to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, a deviation from the standard value occurs for some reason, check the ISC system. (Refer to GROUP 11A, On-vehicle Service – Idle Speed Check P.11A-14)*

### <3.8 L ENGINE>

1. Before inspection and adjustment, set vehicle in the following condition:
   - Engine coolant temperature: 80 – 90 °C (176.0 – 194.0 °F)
   - Lights, electric cooling fan and accessories: OFF
   - Transaxle: Neutral ("N" or "P" position)
   - Steering wheel: Straightforward
2. Check whether or not the idle speed is the standard value. Refer to GROUP 11C, On-vehicle Service – Idle Speed Check P.11C-16.

   **Standard value: 680 ± 100 r/min**
3. Turn on the A/C switch and the blower speed selection dial. Engine idling speed should be within the standard value:

   **Standard value: 680 ± 50 r/min**

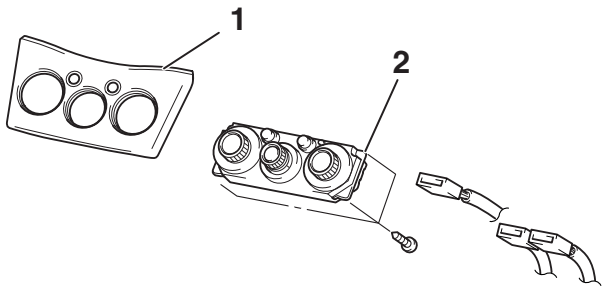
   *NOTE: The powertrain control module determines whether the A/C load is low or high according to the output signal from the A/C-ECU.*

   *NOTE: It is not necessary to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, a deviation from the standard value occurs for some reason, check the ISC system. (Refer to GROUP 11C, On-vehicle Service – Idle Speed Check P.11C-16)*

# HETER CONTROL ASSEMBLY (INCORPORATED IN A/C-ECU)

## REMOVAL AND INSTALLATION

M1552021900039

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**REMOVAL STEPS**

- FLOOR CONSOLE ASSEMBLY (REFER TO GROUP 52A, FLOOR CONSOLE ASSEMBLY P.52A-28)

1. CENTER PANEL
2. HEATER CONTROL (A/C-ECU)*

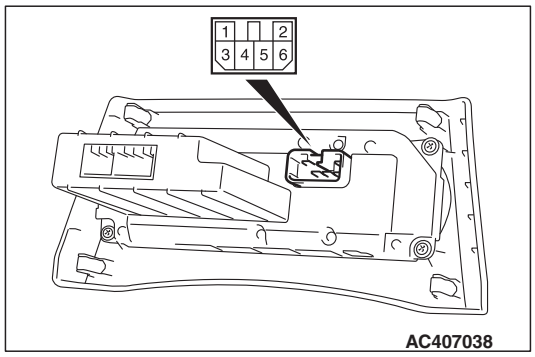
*NOTE: The A/C-ECU integrated with the blower switch is incorporated in the heater control, and the A/C switch and the rear window defogger switch are incorporated in the A/C-ECU.*

## INSPECTION

M1552014301867

### BLOWER SWITCH CONTINUITY CHECK

Check the following and replace the heater control if they are defective.

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| Switch position | Tester connection (Connector A) | Specified condition |
|---|---|---|
| 0 (OFF) | 1 – 4, 2– 4, 4 – 5, 4 – 6 | Open circuit |
| 1 (LO) | 1 – 4 | Less than 2 ohms |
| 2 (ML) | 4 – 6 | Less than 2 ohms |
| 3 (MH) | 2 – 4 | Less than 2 ohms |
| 4 (HI) | 4 – 5 | Less than 2 ohms |

# HEATER UNIT, HEATER CORE, BLOWER ASSEMBLY AND EVAPORATOR UNIT

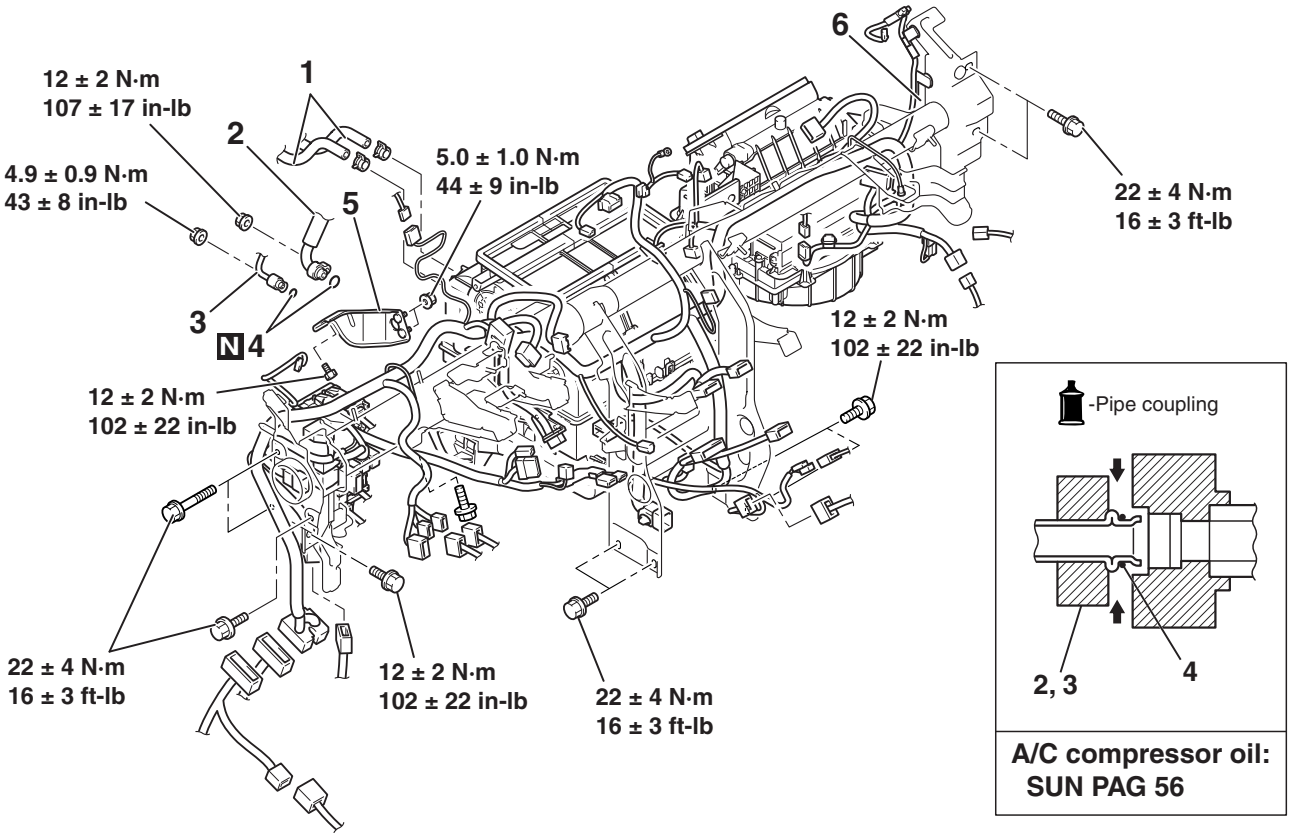
## HEATER UNIT AND FRONT DECK CROSSMEMBER ASSEMBLY REMOVAL AND INSTALLATION

M1552021400023

**⚠ *WARNING***

- ***Before removing the front seat assembly, refer to GROUP 52B, Service Precautions P.52B-28 and Air Bag Module and Clock Spring P.52B-423.***
- ***When removing and installing the front passenger seat, be sure to carry out accuracy check occupant classification sensor after the seat has been installed in the vehicle. (Refer to GROUP 52B, On-Vehicle Service P.52B-410.)***

**Pre-removal and Post-installation Operation**
- Refrigerant draining and Refilling (Refer to Charging and Discharging P.55A-184).
- Engine coolant Draining and Refilling (Refer to GROUP 00, Engine coolant P.00-68).
- Floor Console Bracket Removal and Installation (Refer to GROUP 52A, Floor Console P.52A-28).
- Instrument Panel Removal and Installation (Refer to GROUP 52A, Instrument Panel P.52A-19).
- Cowl Side Trim Removal and Installation (Refer to GROUP 52A, Instrument Panel P.52A-30).
- Steering Column Shaft Assembly Removal and Installation (Refer to GROUP 37, Steering Shaft P.37-29).
- Strut Tower Bar <3.8 L> (Refer to GROUP 42, Removal And Installation P.42-14.)

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**TSB Revision**

**REMOVAL STEPS**

<<A>> 1. HEATER HOSE CONNECTION
<<A>> 2. SUCTION PIPE CONNECTION
3. LIQUID PIPE CONNECTION
4. O-RING
• INSTRUMENT PANEL UNDER COVER (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-19.)

**REMOVAL STEPS (Continued)**

<<B>> 5. FRONT DECK STAY
6. HEATER UNIT AND FRONT DECK CROSSMEMBER ASSEMBLY

**Required Special Tools:**
MB990900 or MB991164: Door adjusting wrench

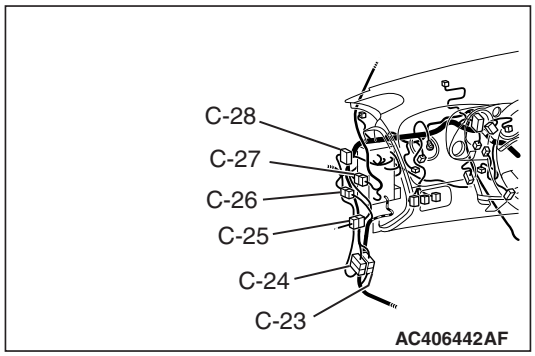
## REMOVAL SERVICE POINTS

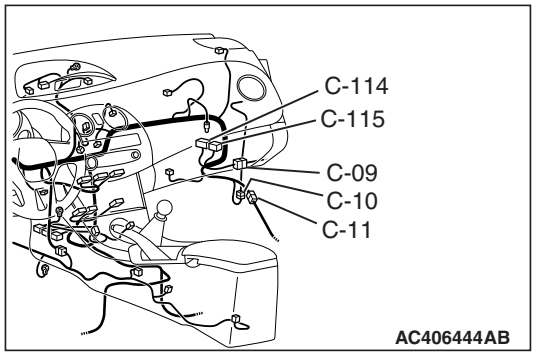
### <<A>> SUCTION PIPE AND LIQUID PIPE DISCONNECTION

**⚠ CAUTION**
**As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.**
To prevent the entry of dust or other foreign bodies, plug the dismantled hose and the nipples of the expansion valves.

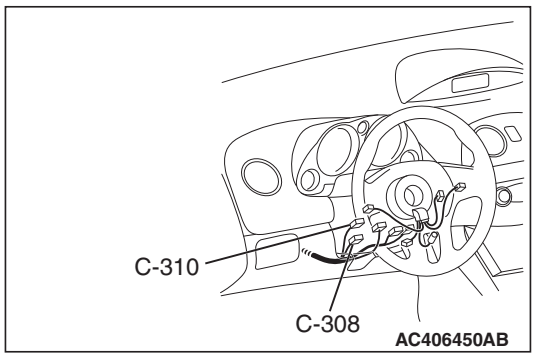
### <<B>> HEATER UNIT AND FRONT DECK CROSSMEMBER ASSEMBLY REMOVAL

Disconnect the following connectors to gain access to the front deck crossmember.

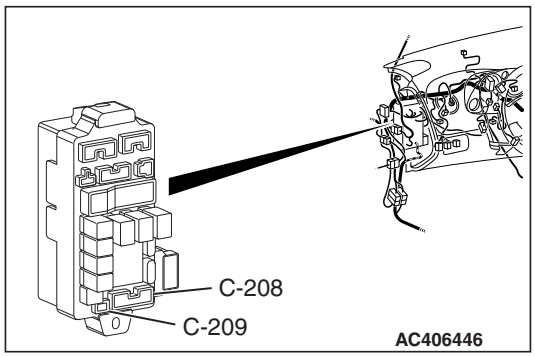



- C-23 Instrument Panel Wiring Harness And Floor Wiring Harness Combination
- C-24 Instrument Panel Wiring Harness And Front Wiring Harness Combination
- C-25 Instrument Panel Wiring Harness And Front Door Wiring Harness (Lh) Combination
- C-26 Front Wiring Harness And Floor Wiring Harness Combination
- C-27 Instrument Panel Wiring Harness And Roof Wiring Harness Combination
- C-28 Joint Connector (1)
- C-09 Instrument Panel Wiring Harness And Front Door Wiring Harness (Rh) Combination
- C-10 Instrument Panel Wiring Harness And Front Wiring Harness Combination
- C-11 Instrument Panel Wiring Harness And Floor Wiring Harness Combination
- C-114 Audio Amplifier
- C-115 Audio Amplifier



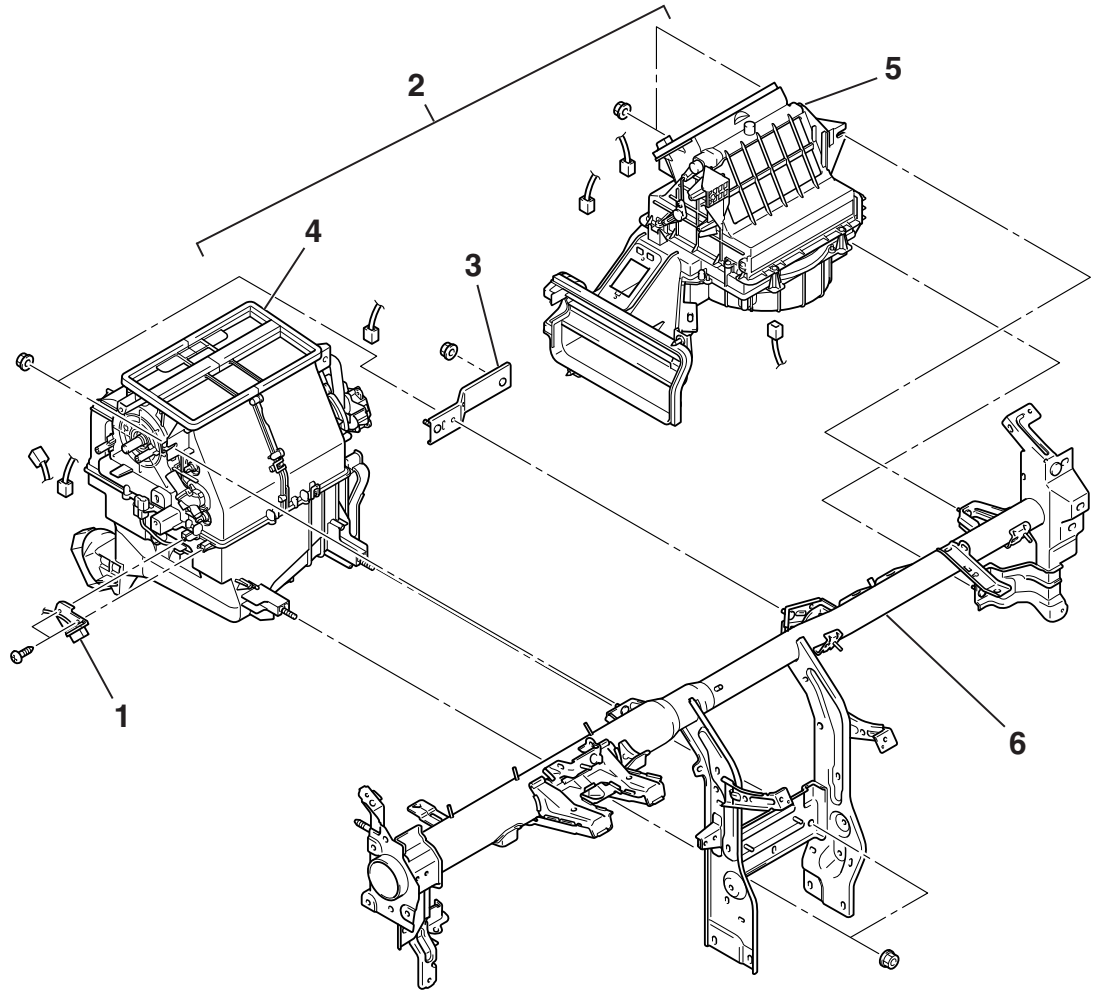

- C-308 IGNITION SWITCH
- C-310 KEY REMINDER SWITCH




- C-208 FLOOR WIRING HARNESS AND JUNCTION BLOCK COMBINATION
- C-209 ROOF WIRING HARNESS AND JUNCTION BLOCK COMBINATION

## HEATER UNIT AND BLOWER ASSEMBLY REMOVAL AND INSTALLATION

M1552011600491




**TSB Revision**

**REMOVAL STEPS**
1. DATA LINK CONNECTOR BRACKET
2. HEATER UNIT AND BLOWER ASSEMBLY
3. PLATE BRACKET

**REMOVAL STEPS (Continued)**
4. HEATER UNIT
5. BLOWER ASSEMBLY
6. FRONT DECK CROSSMEMBER ASSEMBLY

## DISASSEMBLY AND ASSEMBLY

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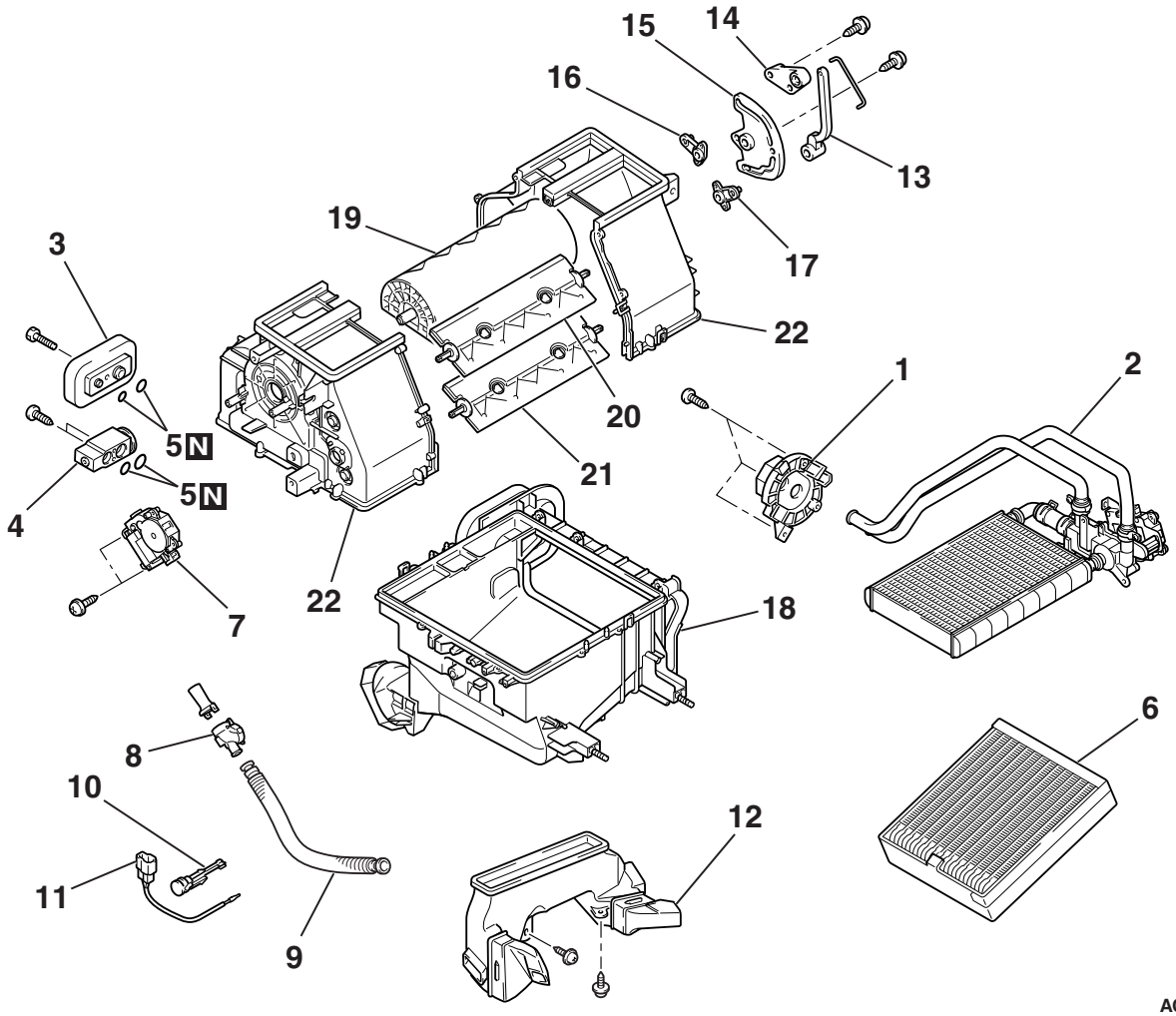


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**DISASSEMBLY STEPS**
1. PACKING
2. HEATER CORE ASSEMBLY
3. EXPANSION VALVE JOINT
4. EXPANSION VALVE
5. O-RING
6. EVAPORATOR
7. MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER
8. ASPIRATOR
9. ASPIRATOR HOSE
10. AIR THERMO SENSOR CLIP

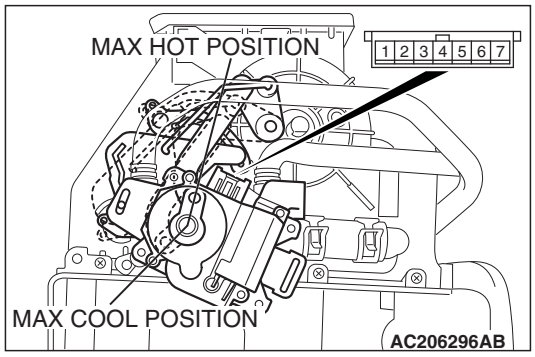
**DISASSEMBLY STEPS**
11. AIR THERMO SENSOR
12. FOOT DUCT
13. LEVER A
14. LEVER B
15. LEVER C
16. LEVER D
17. LEVER E
18. HEATER CASE LOWER
19. MODE SELECTION DAMPER
20. MAX A/C DAMPER
21. AIR MIXING DAMPER
22. HEATER CASE UPPER

**TSB Revision**

## INSPECTION

M1552014301878

### AIR MIXING DAMPER CONTROL MOTOR CHECK




**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the MAX COOL or MAX HOT position.**

Check the air mix damper control motor by the following procedures.

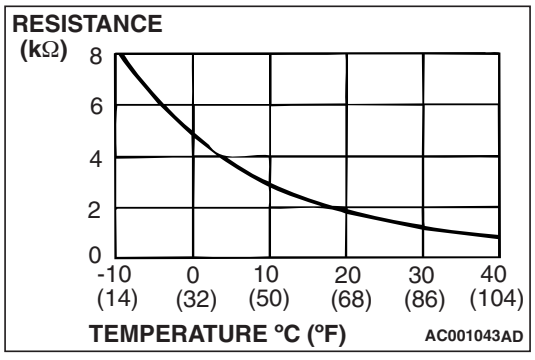
| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the MAX COOL position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the MAX COOL position to the MAX HOT position |
| At the MAX HOT position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the MAX HOT position to the MAX COOL position |

### POTENTIOMETER CHECK

While checking the air mix damper control motor, measure the resistances between terminals numbers 3 and 5 and between numbers 3 and 7. At this time, the resistances should change gradually within the standard value.

**Standard value: 1.7 (MAX HOT) – 5.0 (MAX COOL) kΩ**

### AIR THERMO SENSOR INSPECTION

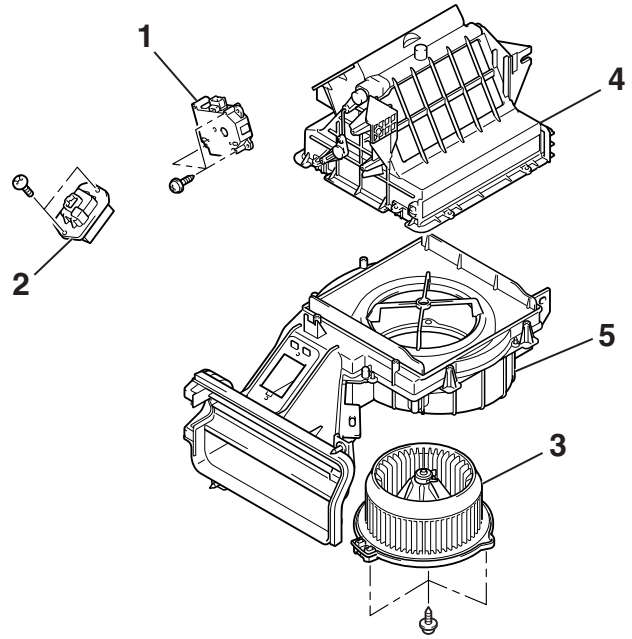



Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

*NOTE: The temperature at the check should not exceed the range in the graph.*

## BLOWER ASSEMBLY DISASSEMBLY AND ASSEMBLY

M1551005500254

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**DISASSEMBLY STEPS**

1. OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR
2. RESISTOR

**DISASSEMBLY STEPS**

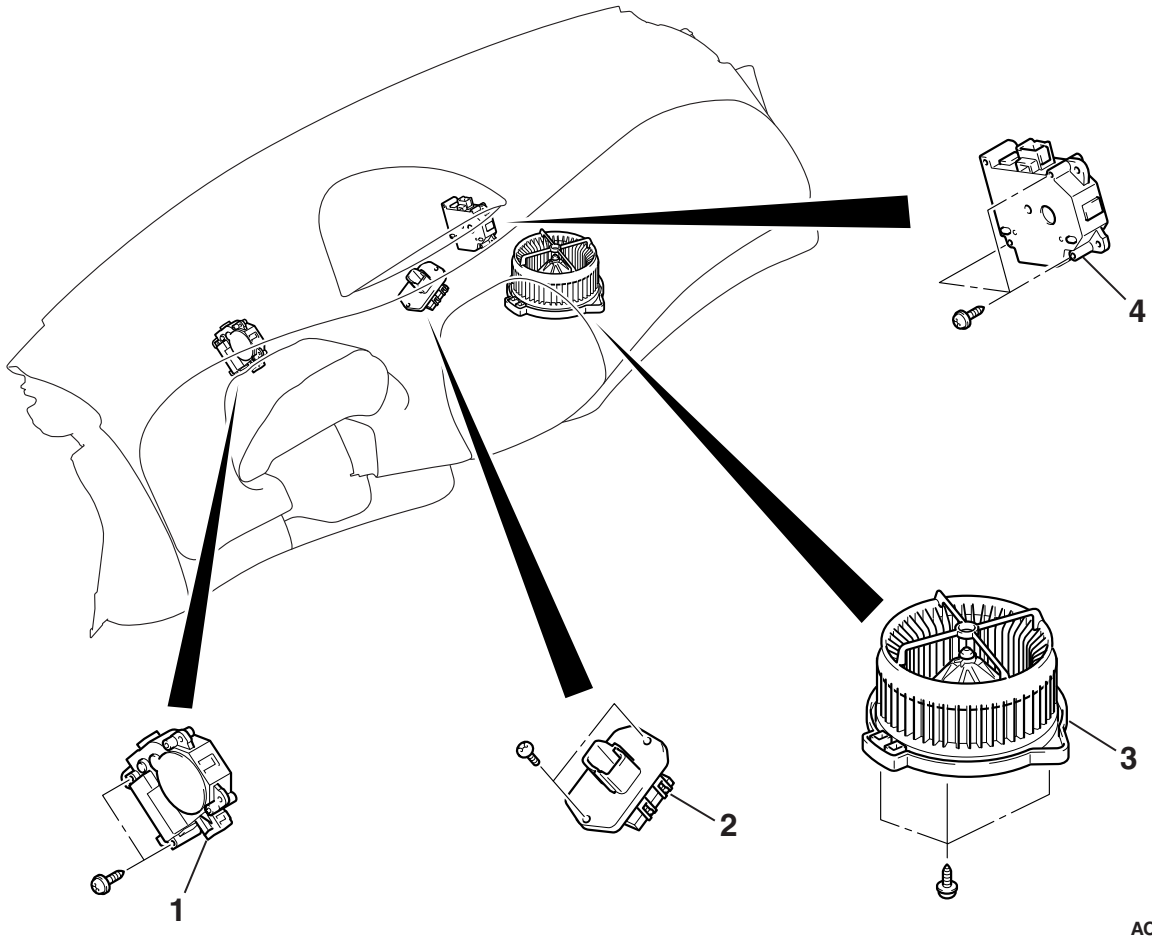
3. BLOWER MOTOR
4. BLOWER CASE UPPER
5. BLOWER CASE LOWER

**TSB Revision**

# MOTORS AND TRANSISTOR

## REMOVAL AND INSTALLATION

M1551006900051

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**MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER REMOVAL STEP**

>>A<< 1. MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER

**POWER TRANSISTOR REMOVAL STEP**

- GLOVE BOX ASSEMBLY, INSTRUMENT PANEL PARCEL BOX (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-19).

2. RESISTOR

**BLOWER MOTOR REMOVAL STEP**

- INSTRUMENT PANEL UNDER COVER (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-19).

3. BLOWER MOTOR

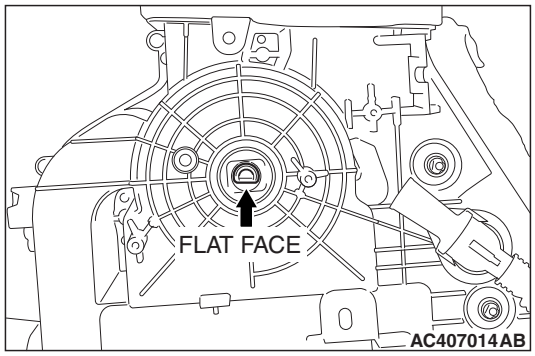
**OUTSIDE/INSIDE AIR SELECTION DAMPER MOTOR REMOVAL STEP**

- GLOVE BOX ASSEMBLY, INSTRUMENT PANEL PARCEL BOX (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-19).

4. OUTSIDE/INSIDE AIR SELECTION DAMPER MOTOR

## INSTALLATION SERVICE POINT

### >>A<< MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER INSTALLATION




Place the flat face as shown downward and install.

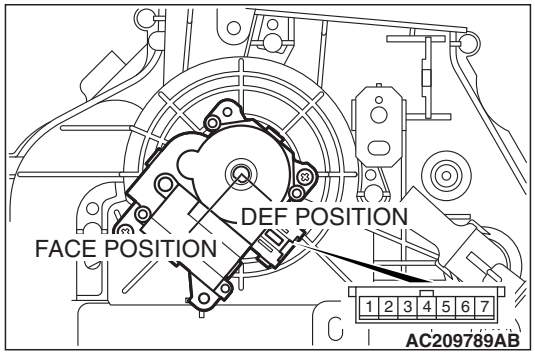
## INSPECTION

M1551006300468

## MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER CHECK

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the FACE or DEF position.**




Check the mode selection damper control motor and potentiometer by the following procedures.

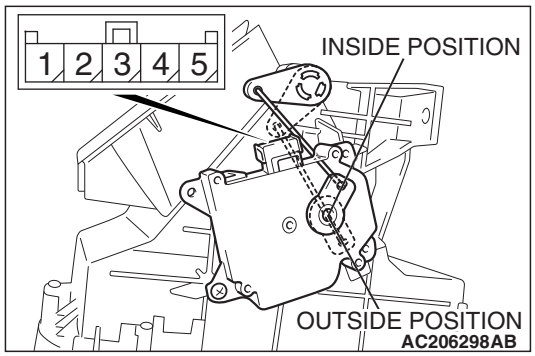
| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the FACE position | • Connect terminal 2 to the positive battery terminal<br>• Connect terminal 1 to the negative battery terminal | The lever moves from the FACE position to the DEF position |
| At the DEF position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 2 to the negative battery terminal | The lever moves from the DEF position to the FACE position |

## POTENTIOMETER CHECK

While checking the mode selection damper control motor and potentiometer, measure the resistances between terminal numbers 3 and 5 and between terminal numbers 3 and 7. At this time, the resistances should change gradually within the standard value.

**Standard value: 0.8 (DEF) – 4.8 (FACE) kΩ**

## OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR CHECK



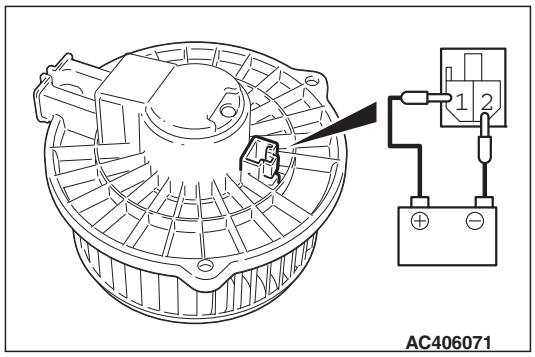

⚠ CAUTION

**Cut off the battery voltage when the damper is in the inside/outside air position.**

Check the outside/inside air selection damper control motor by the following procedures.

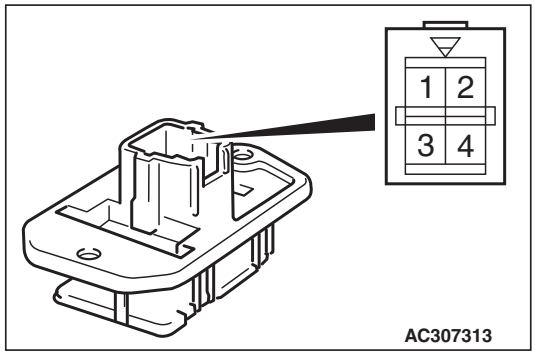
| Lever position | Battery connection | Lever operation |
|---|---|---|
| At the inside position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 5 to the negative battery terminal | The lever moves from the outside position to the inside position |
| At the outside position | • Connect terminal 1 to the positive battery terminal<br>• Connect terminal 4 to the negative battery terminal | The lever moves from the inside position to the outside position |

## BLOWER FAN AND MOTOR CHECK




When battery voltage is applied between the terminals, check that the motor operates. Also, check that there is no abnormal noise.

## RESISTOR CHECK




Use an ohmmeter to measure the resistance between the terminals. Check that the measured value is at the standard value.

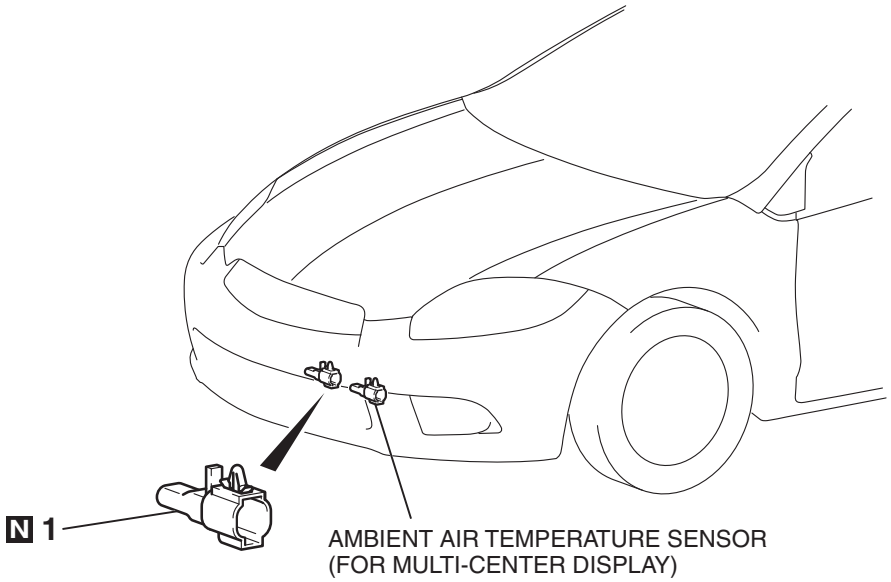
**Standard value:**

| Measurement terminal | Standard value Ω |
|---|---|
| Between terminals 2 and 3 (LO) | 2.54 |
| Between terminals 1 and 2 (ML) | 1.24 |
| Between terminals 2 and 4 (MH) | 0.6 |

# AMBIENT TEMPERATURE SENSOR

## REMOVAL AND INSTALLATION

M1554003400584




AC711796AC

**REMOVAL STEP**

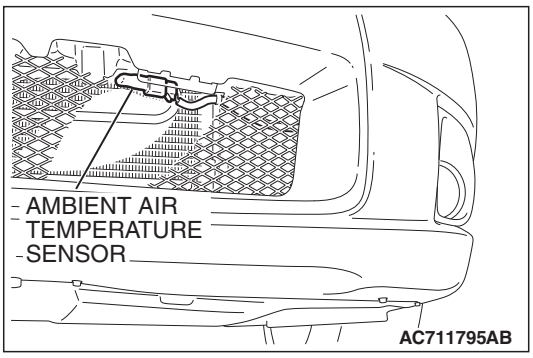
- FRONT BUMPER ASSEMBLY (REFER TO GROUP 51, FRONT BUMPER ASSEMBLY AND RADIATOR GRILLE P.51-2).

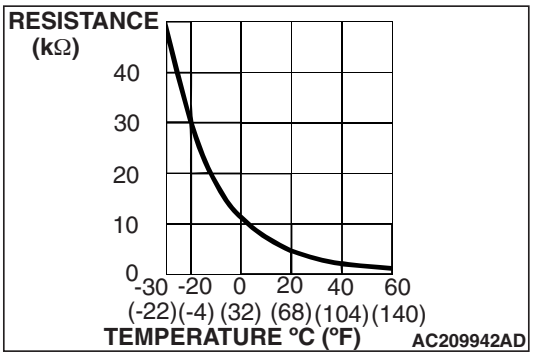
1. AMBIENT AIR TEMPERATURE SENSOR(FOR A/C)

## INSPECTION

M1551006300888

## AMBIENT AIR TEMPERATURE SENSOR CHECK




**⚠ CAUTION**

**The ambient air temperature sensor should be checked without removing it. If the sensor is removed, it is no longer serviceable.**

Measure the resistance between the sensor terminals under at least two temperatures. The resistance values should meet the values shown.

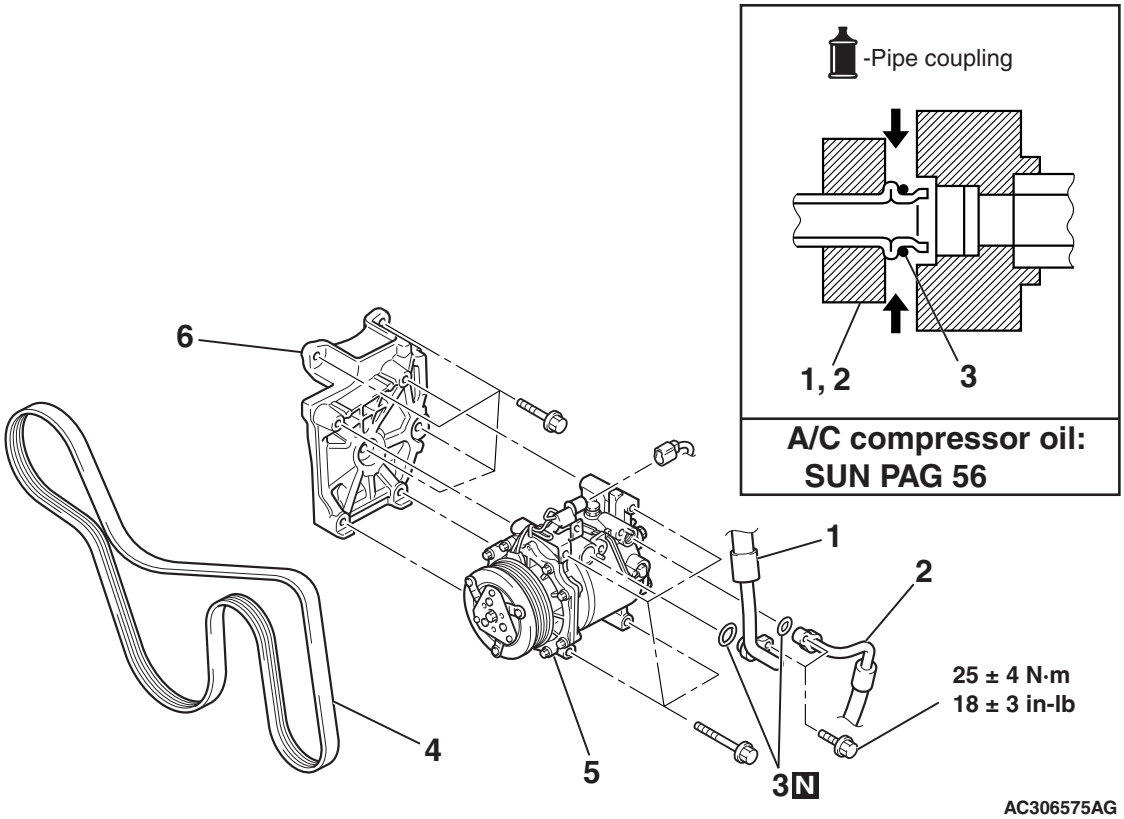
*NOTE: The temperature and resistance should be within the shown range.*

# COMPRESSOR ASSEMBLY AND TENSION PULLEY

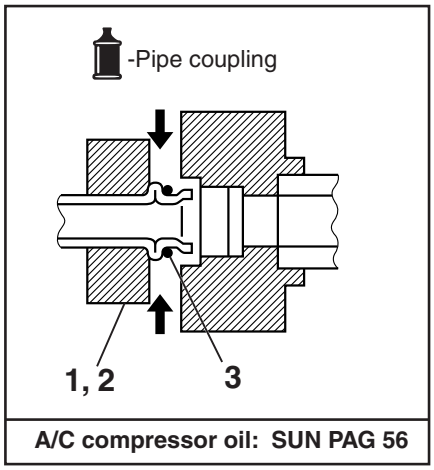
## REMOVAL AND INSTALLATION

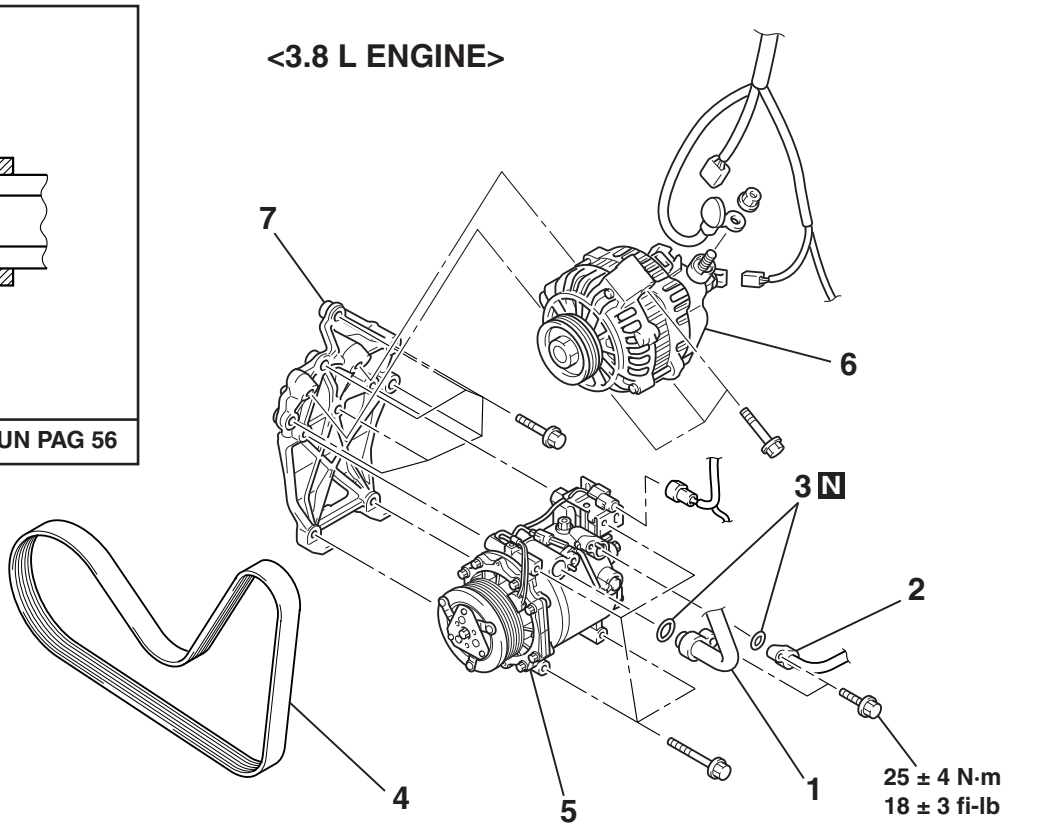
M1552004100502

| Pre-removal Operation | Post-installation Operation |
|---|---|
| • Refrigerant Discharging (Refer to P.55A-184).<br>• Front Bumper Under Cover (Refer to GROUP 51, FRONT BUMPERP.51-2).<br>• Front Under Cover RH (Refer to GROUP 51, UNDER COVER P.51-8). | • Drive Belt Tension Adjustment (Refer to GROUP 00, Maintenance Service – Drive Belt P.00-55).<br>• Refrigerant Charging (Refer to P.55A-184).<br>• Front Bumper Under Cover (Refer to GROUP 51, FRONT BUMPERP.51-2).<br>• Front Under Cover RH (Refer to GROUP 51, UNDER COVER P.51-8). |




TSB Revision




**REMOVAL STEPS**

<<A>> 1. FLEXIBLE SUCTION HOSE CONNECTION
<<A>> 2. FLEXIBLE DISCHARGE HOSE CONNECTION
3. O-RING

**REMOVAL STEPS (Continued)**

<<B>> >>A<< 4. DRIVE BELT
5. A/C COMPRESSOR
6. GENERATOR
7. A/C COMPRESSOR BRACKET

## REMOVAL SERVICE POINTS

## <<A>> FLEXIBLE SUCTION HOSE AND FLEXIBLE DISCHARGE HOSE DISCONNECTION

**⚠ CAUTION**

**As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.**

To prevent the entry of dust or other foreign bodies, plug the dismantled hoses and compressor nipples.

## <<B>> A/C COMPRESSOR REMOVAL

Take care not to spill any compressor oil when removing the compressor.

## INSTALLATION SERVICE POINT

### >>A<< A/C COMPRESSOR INSTALLATION

If a new compressor is installed, first adjust the amount of oil according to the procedures described below, and then install the compressor.

1. Measure the amount X $cm^3$ (X fl.oz) of oil within the removed compressor.
2. Drain (from the new compressor) the amount of oil calculated according to the following formula, and then install the new compressor.

   New compressor oil amount = 140$cm^2$ (4.7 fl.oz)

   **140 $cm^3$ – X $cm^3$ = Y $cm^3$ (4.7 fl.oz – X fl.oz = Y fl.oz)**

*NOTE: Y $cm^3$ (Y fl.oz) indicates the amount of oil in the refrigerant line, the condenser, the evaporator, etc.*

*NOTE: When replacing the following parts at the same times as the compressor, subtract the rated oil amount of each part from Y $cm^3$ (Y fl.oz) and discharge from the new compressor.*

**Quantity:**

**Evaporator: 60 $cm^3$ (2.0 fl.oz)**

**Condenser: 15 $cm^3$ (0.5 fl.oz)**

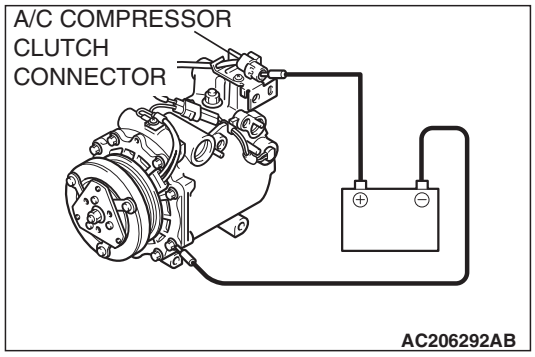
**Suction hose: 10 $cm^3$ (0.3 fl.oz)**

**Receiver: 10 $cm^3$ (0.3 fl.oz)**

## INSPECTION

M1552014301889

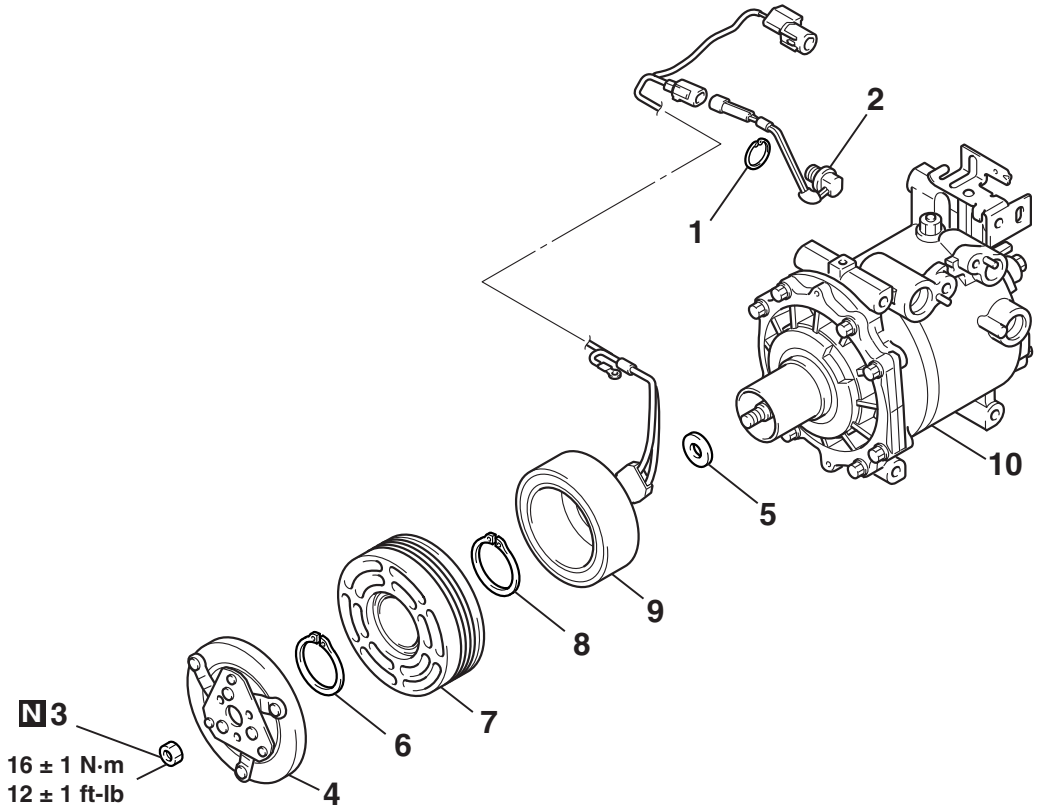
### A/C COMPRESSOR CLUTCH OPERATION CHECK




Connect the compressor connector terminal to the battery positive (+) terminal and ground the battery's negative (-) terminal to the compressor unit. At that time, the A/C compressor clutch should make a definite operating sound.

## DISASSEMBLY AND ASSEMBLY

M1552004600734

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**COOLING TEMPERATURE SWITCH DISASSEMBLY STEPS**

1. SNAP RING
2. COOLING TEMPERATURE SWITCH

**A/C COMPRESSOR CLUTCH DISASSEMBLY**

>>D<< • AIR GAP ADJUSTMENT

<<A>> >>C<< 3. SELF-LOCKING NUT

4. ARMATURE
5. SHIM

**A/C COMPRESSOR CLUTCH DISASSEMBLY (Continued)**

>>B<< 6. SNAP RING

7. ROTOR
8. SNAP RING

>>A<< 9. FIELD CORE

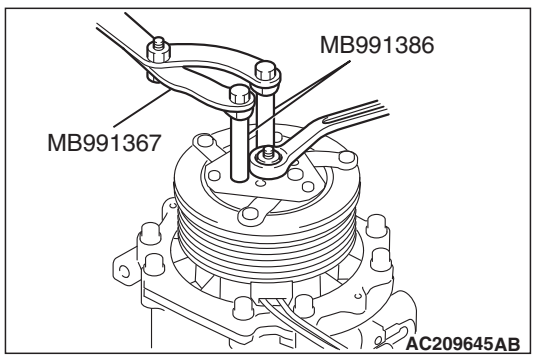
10. A/C COMPRESSOR

**Required Special Tools:**

- MB991367: Special Spanner
- MB991386: Pin

## DISASSEMBLY SERVICE POINT

## <<A>> SELF-LOCKING NUT REMOVAL

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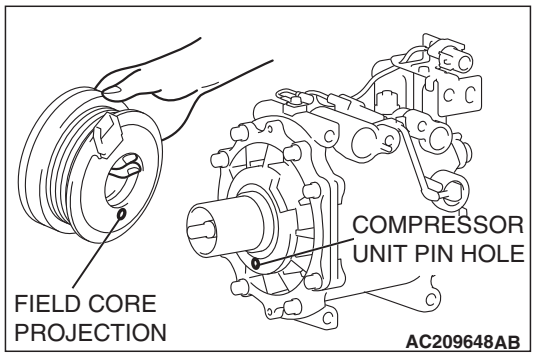
## ASSEMBLY SERVICE POINTS

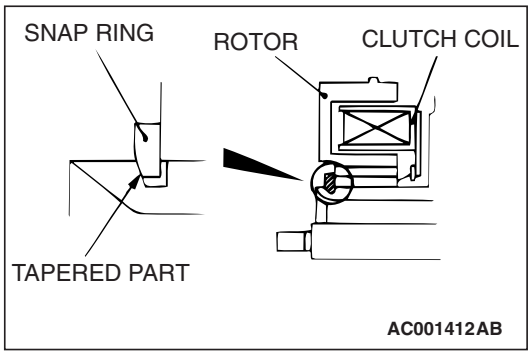
### >>A<< FIELD CORE ATTACHMENT

Line up the pin hole on the compressor unit with the field core projection and attach.




### >>B<< SNAP RING INSTALLATION

Using snap ring pliers, fit the snap ring so that the snap ring's tapered part is on the outside.




### >>C<< SELF-LOCKING NUT INSTALLATION

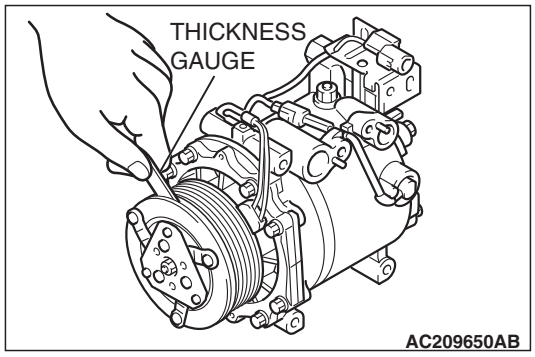
Using a special tool, as when removing the nut, secure the armature and tighten the self-locking nut.

### >>D<< AIR GAP ADJUSTMENT

Check whether or not the air gap of the clutch is within the standard value.

**Standard value:**
**0.3 – 0.5 mm (0.012 – 0.020 inch)**

*NOTE: If there is a deviation of the air gap from the standard value, make the necessary adjustment by adjusting the number of shims.*



## INSPECTION

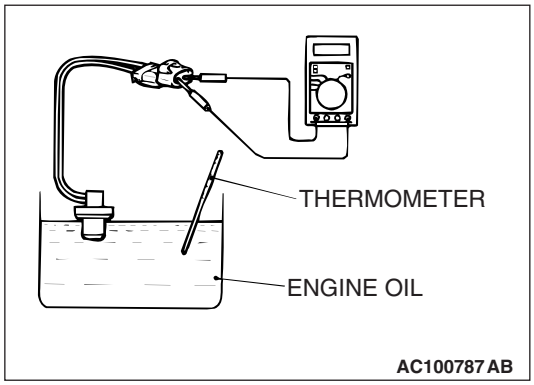
M1552014301890

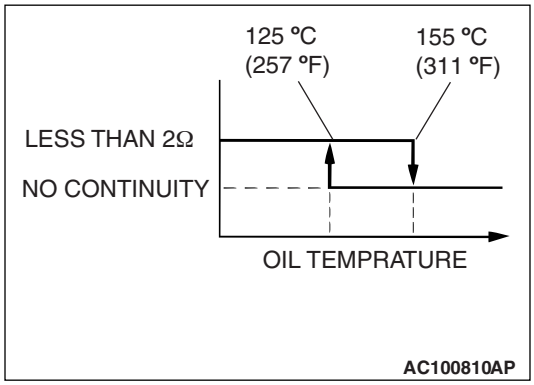
## COOLING TEMPERATURE SWITCH

**⚠ CAUTION**

**Do not heat more than necessary.**

1. Dip the metal part of the cooling temperature switch into engine oil and increase the oil temperature using a gas burner or similar.




2. When the oil temperature reaches the standard value, check that voltage is supplied between the terminals.

   **Standard value:**

| Item | Temperature |
|---|---|
| Less than 2 ohms | Slightly below 155°C (311°F) |
| No continuity | 155°C (311°F) or more |

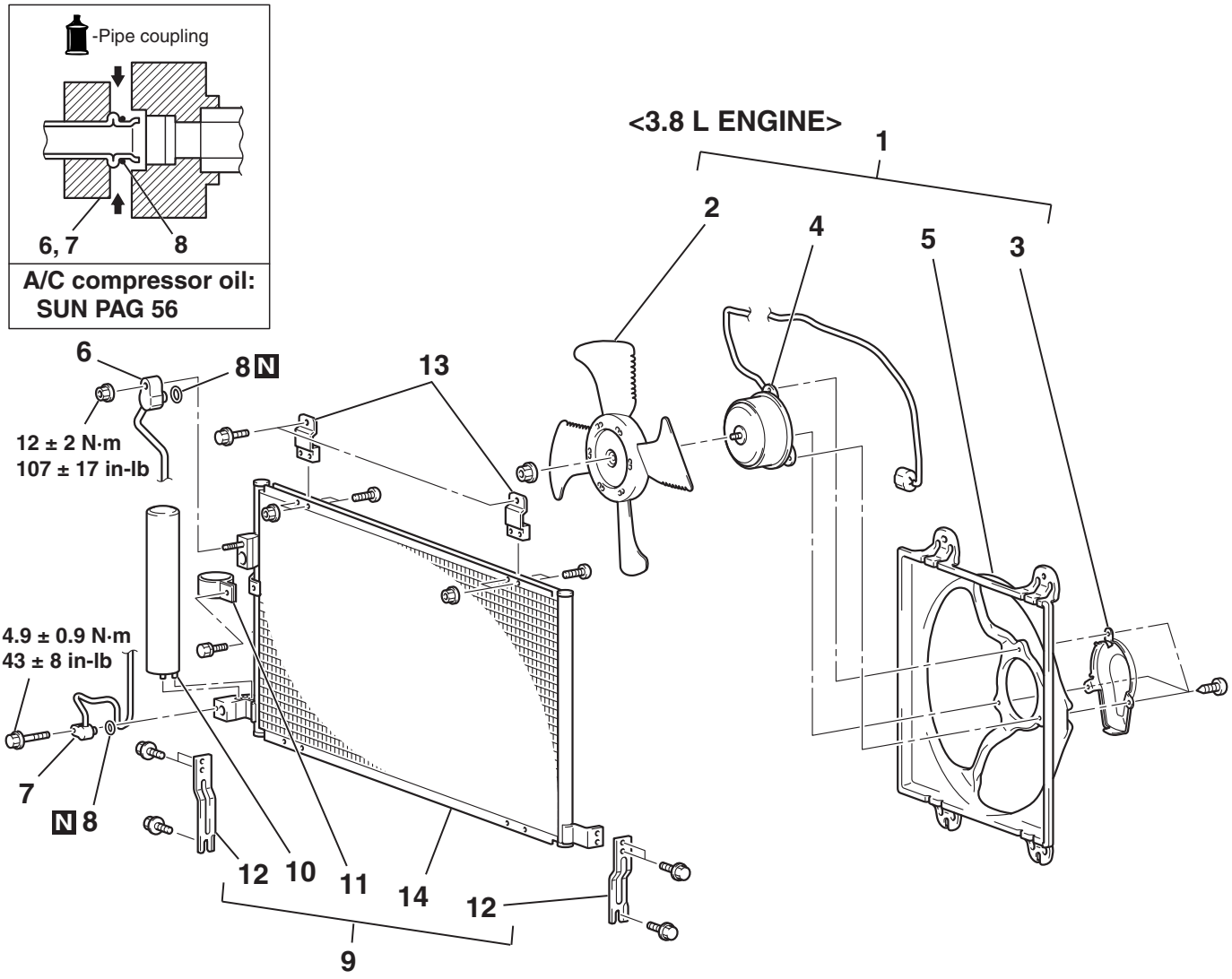
*NOTE: When the oil temperature is 155°C (311°F) or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 125°C (257°F) or less.*

# CONDENSER AND CONDENSER FAN MOTOR

## REMOVAL AND INSTALLATION

M1552006700771

**Pre-removal and Post-installation Operation**
- Refrigerant Draining and Refilling (Refer to P.55A-184).
- Air Duct Removal and Installation (Refer to GROUP 15, Air Cleaner P.15-4 <2400> or P.15-5 <3800> ).

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**CONDENSER FAN MOTOR REMOVAL STEPS**
1. CONDENSER FAN ASSEMBLY
2. FAN
3. COVER
4. MOTOR
5. SHROUD
- RADIATOR GRILLES
- FRONT END STRUCTURE BAR

<<A>>
<<A>>

**CONDENSER REMOVAL STEPS**
6. FLEXIBLE DISCHARGE HOSE CONNECTION
7. LIQUID PIPE A CONNECTION
8. O-RING
- FRONT UNDER COVER
9. CONDENSER ASSEMBLY
10. RECEIVER
11. CLAMP
12. UNDER BRACKET
13. UPPER BRACKET

>>A<<
14. CONDENSER

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## REMOVAL SERVICE POINT

## <<A>> FLEXIBLE DISCHARGE HOSE AND LIQUID PIPE A DISCONNECTION

**⚠ CAUTION**

**As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.**

To prevent the entry of dust or other foreign bodies, plug the dismantled hose and condenser assembly nipples.

## INSTALLATION SERVICE POINT

## >>A<< CONDENSER INSTALLATION

When replacing the condenser, refill it with a specified amount of compressor oil and install it to the vehicle.

**Compressor oil: SUN PAG 56**

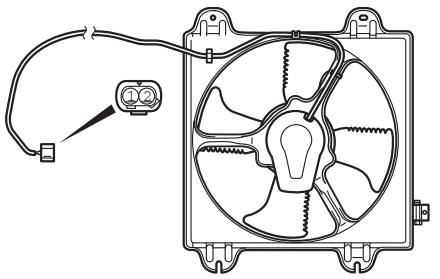
**Quantity: 15 $cm^3$ (0.5 fl.oz)**

## INSPECTION

M1552014301908

## CONDENSER FAN MOTOR CHECK

<3.8 L ENGINE>



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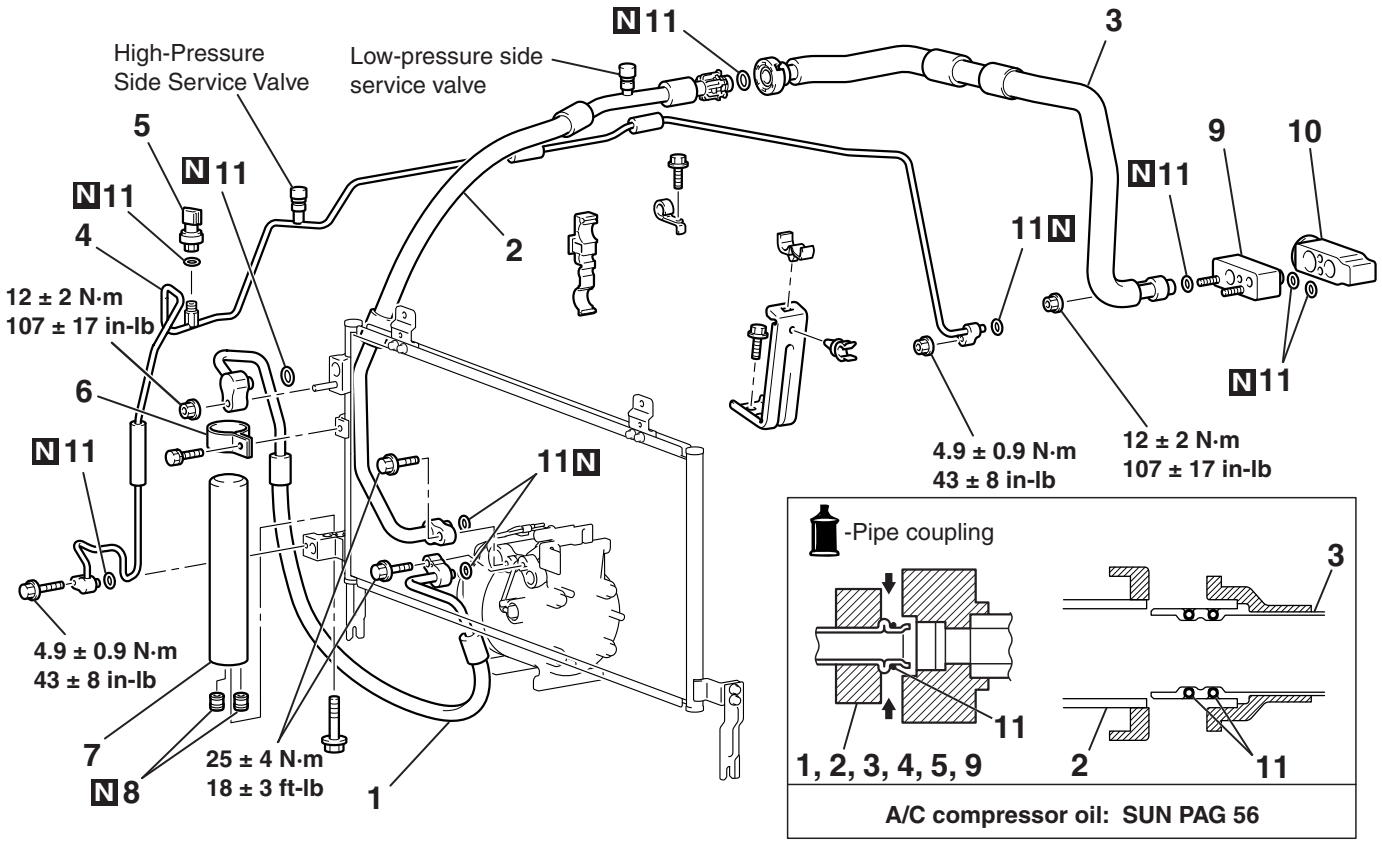
Check to be sure that the condenser fan motor operates when battery voltage is applied to terminal 2 and terminal 1 grounded.

# REFRIGERANT LINE

## REMOVAL AND INSTALLATION

M1552006400907

**Pre-removal and Post-installation Operation**
- Refrigerant Draining and Refilling (Refer to Charging and Discharging P.55A-184).

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| | | REMOVAL STEPS |
|---|---|---|
| <<A>> | | 1. FLEXIBLE DISCHARGE HOSE |
| <<B>> | >>A<< | 2. FLEXIBLE SUCTION HOSE |
| <<B>> | >>A<< | 3. SUCTION PIPE |
| <<A>> | | 4. LIQUID PIPE |
| <<A>> | | 5. A/C PRESSURE SENSOR |
| | | 6. CLAMP |

| | REMOVAL STEPS (Continued) |
|---|---|
| <<A>> | 7. RECEIVER |
| | 8. RECEIVER JOINT |
| | 9. EXPANSION VALVE JOINT |
| <<A>> | 10. EXPANSION VALVE |
| | 11. O-RING |

## REMOVAL SERVICE POINTS

### <<A>> HOSE/PIPE/RECEIVER/EXPANTION VALVE DISCONNECTION

**⚠ CAUTION**

**As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.**

To prevent the entry of other foreign bodies, plug the condenser, compressor, and expansion valve nipples.

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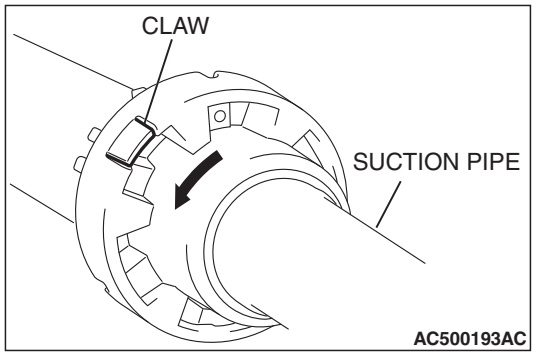
## <<B>> FLEXIBLE SUCTION HOSE AND SUCTION PIPE DISCONNECTION

**⚠ CAUTION**

**As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.**




To disconnect the suction hose from the suction flexible hose, lift the lug on the suction pipe and twist the suction flexible hose union counterclockwise.

Plug the hose nipple to prevent entry of dust and dirt.

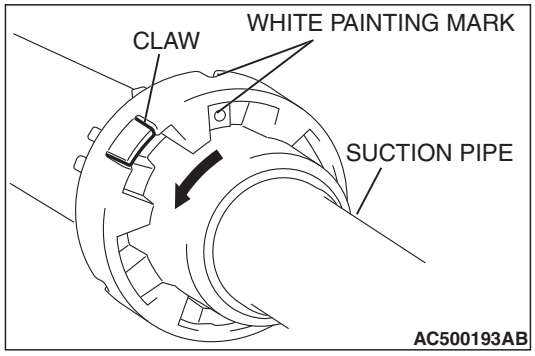
## INSTALLATION SERVICE POINT

## >>A<< SUCTION PIPE AND FLEXIBLE SUCTION HOSE INSTALLATION

1. When replacing the suction hose, refill them with a specified amount of compressor oil, and then install them.

   **Compressor oil: SUN PAG 56**

   **Quantity: 10 $cm^3$ (0.3 fl.oz)**




2. Align the white painting marks when connecting the flexible suction hose and the suction pipe.

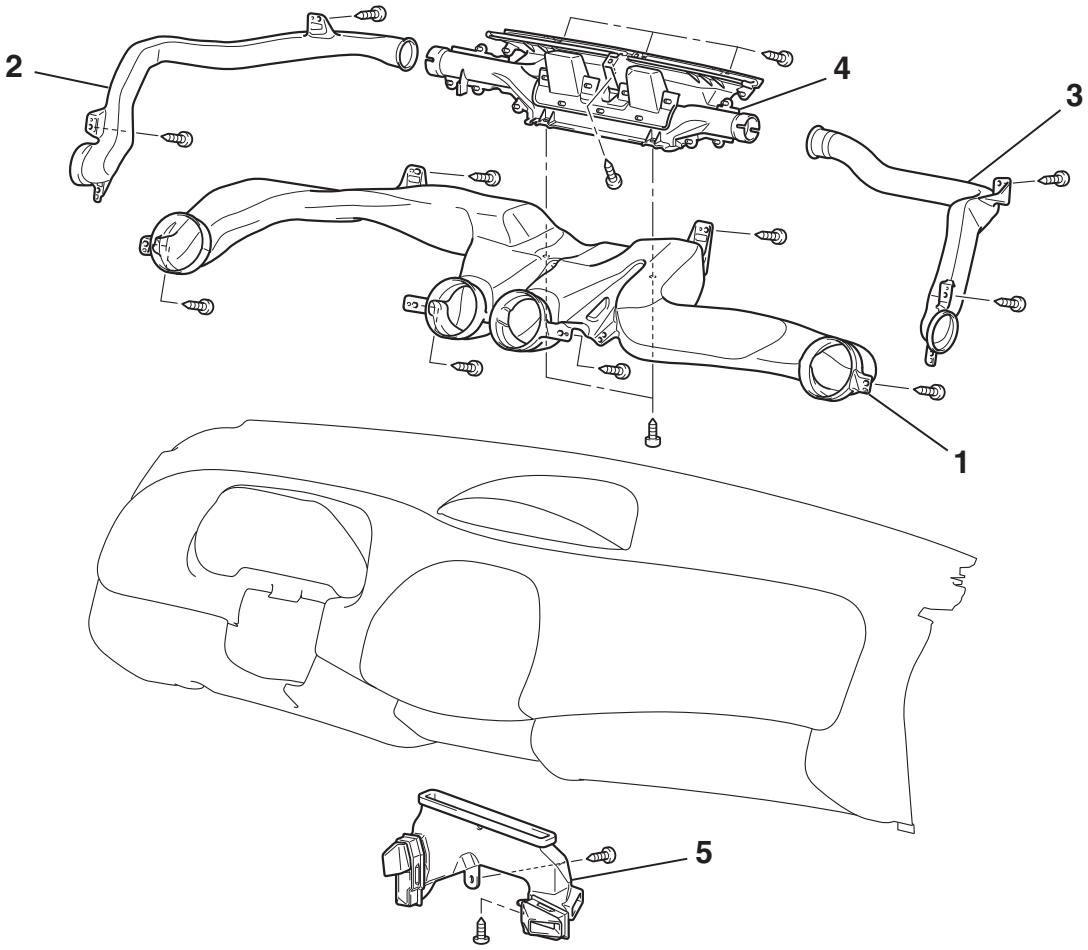
# DUCTS

## REMOVAL AND INSTALLATION

M1553001000327

**⚠ WARNING**

***When removing and installing the front passenger seat, be sure to carry out accuracy check occupant classification sensor after the seat has been installed in the vehicle. (Refer to GROUP 52B, On-vehicle Service P.52B-410.)***

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**DEFROSTER NOZZLE AND DISTRIBUTION DUCT REMOVAL STEPS**

- INSTRUMENT PANEL (REFER TO GROUP 52A P.52A-19).

1. VENTILATOR AIR DISTRIBUTION DUCT
2. SIDE DEFROSTER DUCT LH

**DEFROSTER NOZZLE AND DISTRIBUTION DUCT REMOVAL STEPS (Continued)**

3. SIDE DEFROSTER DUCT RH
4. DEFROSTER NOZZLE

**FOOT DUCT REMOVAL STEPS**

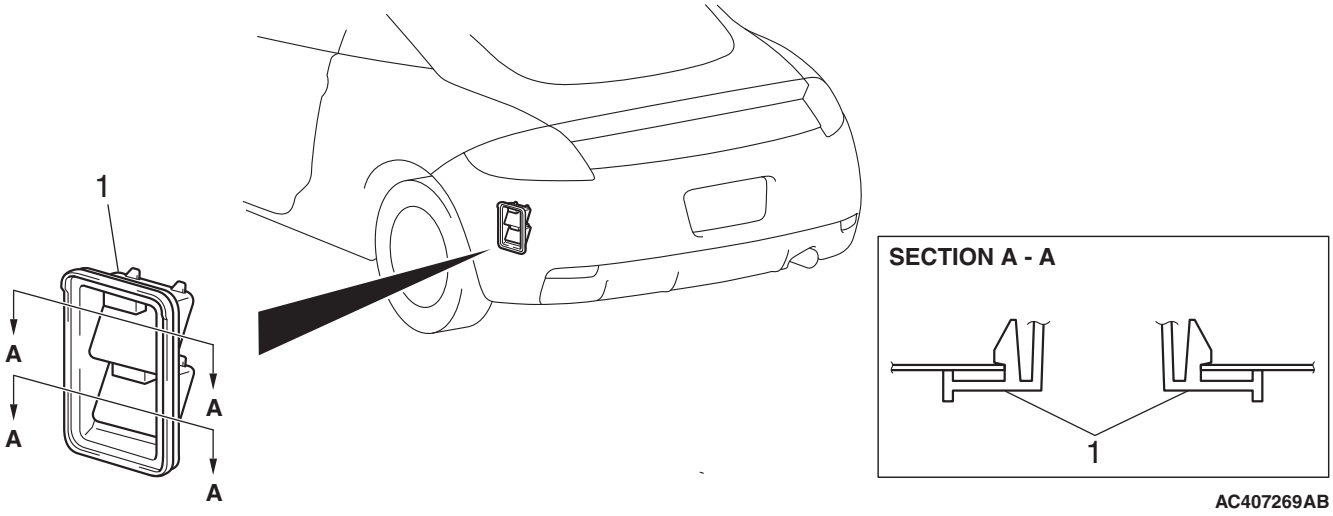
- HEATER UNIT (REFER TO P.55A-199).

5. FOOT DUCT

# VENTILATORS

## REMOVAL AND INSTALLATION

M1553001600534

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**REAR VENTILATION DUCT**
**REMOVAL STEPS**

- REAR BUMPER ASSEMBLY (REFER TO GROUP 51, P.51-4).

1. REAR VENTILATION DUCT

# SPECIFICATIONS

## FASTENER TIGHTENING SPECIFICATIONS

M1552012100314

| Item | Specification |
|---|---|
| Front deck stay mounting nut | 5.0 ± 1.0 N·m (44 ± 9 in-lb) |
| Front deck crossmember mounting bolt (installation from the side of left position) | 22 ± 4 N·m (16 ± 3 ft-lb) |
| Front deck crossmember mounting bolt (installation from the front side of left position) | 12 ± 2 N·m (102 ± 22 in-lb) |
| Front deck crossmember mounting bolt (installation from the left side of center position) | 22 ± 4 N·m (16 ± 3 ft-lb) |
| Front deck crossmember mounting bolt (installation from the right side of center position) | 12 ± 2 N·m (102 ± 22 in-lb) |
| Front deck crossmember mounting bolt (installation of right position) | 22 ± 4 N·m (16 ± 3 ft-lb) |
| Liquid pipe mounting nut (heater unit side) | 4.9 ± 0.9 N·m (43 ± 8 in-lb) |
| Liquid pipe mounting bolt (condenser side) | 4.9 ± 0.9 N·m (43 ± 8 in-lb) |
| Flexible suction hose mounting nut (compressor side) | 25 ± 4 N·m (18 ± 3 ft-lb) |
| Suction pipe mounting nut (heater unit side) | 12 ± 2 N·m (107 ± 17 in-lb) |
| Flexible discharge hose mounting bolt (compressor side) | 25 ± 4 N·m (18 ± 3 ft-lb) |
| Flexible discharge hose mounting nut (condenser side) | 12 ± 2 N·m (107 ± 17 in-lb) |

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## GENERAL SPECIFICATIONS

M1552000200295

| Item | | Manual air conditioning |
|---|---|---|
| Heater control | | Dial type |
| A/C switch | | Push-button type |
| Compressor | | MSC105CA (Scroll type) |
| Refrigerant | Type | R134a (HFC-134a) |
| | Amount g (oz) | 530 – 570 (18.7 – 20.1) |

## SERVICE SPECIFICATIONS

M1552000300485

| Item | | Standard value |
|---|---|---|
| Idle speed r/min | 2.4 L ENGINE | 700 ± 100 |
| Idle speed r/min | 3.8 L ENGINE | 680 ± 100 |
| Idle-up speed r/min | 2.4 L ENGINE | 700 ± 50 |
| Idle-up speed r/min | 3.8 L ENGINE | 680 ± 50 |
| Air mix damper potentiometer resistance kΩ | | 1.7 – 5.0 |
| Air outlet changeover damper potentiometer resistance kΩ | | 0.8 – 4.8 |
| Resistor resistance kΩ | (LO) | 2.54 |
| | (ML) | 1.24 |
| | (MH) | 0.6 |
| Air gap (A/C compressor clutch) mm (in) | | 0.3 – 0.5 (0.012 – 0.020) |
| Cooling temperature switch | Less than 2 ohms | slightly below 155°C (311°F) |
| | No continuity | 155°C (311°F) or more [up to 125°C (257°F) when temperature drops] |

## LUBRICANTS

M1552000400448

| Item | Specified lubricant | Quantity |
|---|---|---|
| Each connection of refrigerant line | SUN PAG 56 | As required |
| Compressor refrigerant unit lubricant $cm^3$ (fl.oz) | SUN PAG 56 | 140 (4.7) |